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PUBLIC HEALTH ADMINISTRATION IN MARYLAND.

A STUDY OF THE STATE DEPARTMENT OF HEALTH AND OTHER AGENCIES HAVING SANITARY FUNCTIONS.

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The Federal, State, and local governments are so closely related in public health matters as to make it highly desirable for each to have full knowledge of the organization, powers, and duties of the others under law, and the extent to which these powers are being exercised. Such knowledge will prevent duplication of effort, conduce to more thorough cooperation, and stimulate to greater uniformity in public health administration.

The act of February 15, 1893, authorizes the Public Health Service to examine State and local laws and regulations for the prevention of the introduction and spread of contagious diseases, and the act of August 14, 1912, contains authority for investigations of sanitation. Under the former provision, an analysis has previously been made by Kerr and Moll of laws and regulations in respect to the organization, powers, and duties of State and local health authorities, and the results published.¹ These authors have also made an analysis of the State laws and regulations relating to the control of communicable diseases.²

It was logical to undertake a closer study of public health administration under these laws, and an invitation of the State Board of Health of Maryland afforded an excellent opportunity. The work of which this report contains the results was begun in July, 1913, and continued for a period of approximately six months. During this time studies were made of the organization and operations of the Maryland department of health and its controlling body, the State board of health, and the health machinery of counties in different parts of the State.

The work was greatly facilitated by the officers of the respective departments and health officers visited. Acknowledgments are due and here made to these officers for their uniform courtesies, and especially to Dr. John S. Fulton, secretary of the State board of health.

STATE DEPARTMENT OF HEALTH.

The State department of health was reorganized in conformity with chapter 560 of the act of 1910 (sec. 21h, art. 43, of the Public General Laws of Maryland) from the then existing "State board of health." The State department is divided into the board of health, the ruling body; the executive office, in charge of the secretary of the board, who is also executive officer; the clerical division, in charge of the

¹ Public Health Bulletin 54.

² Public Health Bulletin 62.

chief clerk of the department; the division of foods and drugs, in charge of the State food and drug commissioner; and the bureaus of communicable diseases, sanitary engineering, vital statistics, chemistry, and bacteriology, each in charge of a bureau chief.

State Board of Health.

Membership of the board.—Section 1 of article 43 of the Public General Laws of Maryland provides that the State board shall be composed as follows: Four members, one of whom shall be an experienced civil engineer, and three of whom shall be experienced physicians, to be appointed by the governor, with the advice and consent of the senate; a secretary, elected by the board, who shall be an educated physician and experienced in sanitary science and who shall be executive officer of the board as well as a member; the attorney general for the State; and the commissioner of health of Baltimore City.

Tenure of office of members.—The secretary holds office as long as he faithfully discharges the duties thereof. He may be removed for just cause at a regular meeting of the board. The term of office of the other appointive members is four years. The law provides that every two years the term of office of two of the appointive members shall expire and that then two other members shall be appointed to fill their places. (Secs. 1 and 5, art. 43.)

Meetings.—The board is required to meet quarterly in the city of Baltimore, and at such other times and places as they shall appoint. Under this authority the board meets on the first Thursday of each month in the city of Baltimore, a majority being necessary to constitute a quorum for the transaction of business.

Salaries and expenses.—The secretary receives \$2,500, other members of the board \$5 per day for each day's attendance at a meeting of the board. The secretary and members of the board receive actual and necessary traveling expenses. (Secs. 5 and 20, art. 43.)

Powers and duties of the board.—By legislative enactments the State board is given rather broad general powers in respect to its internal administration and public health matters within the State.

These powers and duties are summarized from the laws as follows:

1. To have general care of the sanitary interests of the people of the State.
2. To make sanitary investigations and inquiries respecting the causes of diseases, and especially epidemics, the causes of mortality, and the influence of locality, employments, habits, and other circumstances and conditions upon the health of the people.
3. To inquire into and investigate all nuisances affecting the public health.
4. To abate such nuisances by applying to the court for an injunction. (Sec. 2, art. 43.)
5. To elect a president from among their members and a secretary to be executive officer. (Secs. 3 and 4, art. 43.)
6. To organize in any city, village, or legislative district, local boards or advisory committees to serve without pay.

7. To send their secretary or a committee to any part of the State to investigate any unusual sickness or mortality.

8. To take all needful sanitary measures and precautions in emergencies.

9. To adopt all needful rules and regulations subject to the provision of this act. (Sec. 3, art. 43.)

10. To take such action and adopt and enforce such rules and regulations as will prevent the introduction of communicable diseases into the State. Penalty for disobeying any such rules and regulations—a fine of not more than \$500 for every such offense.

11. To call a public conference of health officers whenever necessary, or to send a delegate to any conference of local, State, or national health officers. (Sec. 21, art. 43.)

12. To decide questions arising between local boards as to their jurisdiction or their relative duty in the abatement of any particular nuisance. (Sec. 12, art. 43.)

The State board of health early devoted its attention to the investigation of the prevalence and causes of diseases and their suppression, and to the registration of births and deaths. The urgent need of a chemist soon became manifest, and provision was made for the employment of such an official in 1887. Ten years later the equipment of a bacteriological laboratory was recommended, and the work was begun in June of the following year (1898). In 1910 the work of the board was organized into bureaus, systemizing its performance and enlarging its sphere of usefulness. The number of employees was also materially increased.

From the foregoing it is seen that the State board of health has been merged into a department in which, however, it retains the executive control and quasi legislative powers. Since the board does not sit constantly, however, in the interim of meetings the duties arising must be performed by the executive officer of the department. At least theoretically, therefore, the responsibility and the power of initiation to meet emergency does not appear to rest squarely enough on the administrative official whose duty it is to handle the executive work.

Furthermore, by reason of the method of appointments on the State board of health it would be possible at any time for its personnel to be so changed for political reasons as to include members without the necessary knowledge of public health needs. While the present board is composed mainly of men of eminence in public health matters, who support the secretary in his actions, it might at times become political at the will of the governor of the State.

Generally speaking, State boards of health by reason of their organization and slow moving methods are not in position to exercise all the functions which should be required of a department of health. The State department of health should be able to act quickly and efficiently, and in my opinion this can best be accomplished when it is presided over by an all-time health official who has as his subordinates a sufficient number of capable bureau chiefs and a board or council composed of public officials, business and

professional men to act in an advisory capacity only. This officer should have the power of initiation and he should have as a part of his department an adequate county or district health organization which should be subject to the control of the State department and work under it for the prevention of disease and the improvement of the public health.

It would appear to be the modern tendency to place organizations such as departments of health under the control of one head, as instanced in the States of New York, Pennsylvania, and in the Philippine Islands.

The Executive Office.

The executive office is located in the headquarters of the department at No. 16 West Saratoga Street, Baltimore, Md. The personnel of this office and their respective annual salaries are as follows:

Secretary and executive officer.....	\$2,500
General counsel.....	1,500
Special counsel.....	1,200
One stenographer.....	780
One telephone clerk.....	360
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	6,340

THE SECRETARY OF THE DEPARTMENT.

The secretary of the State board is one of the not-too-many-all-time State health officers. He spends his entire time in his office attending to official matters. Judging from the salary paid, this would not be expected of him, as certain of the bureau chiefs who are receiving as much are not required to devote all of their time to official work. That the salary paid is rather small for the service rendered may be readily appreciated from a glance at the following table, which shows salaries paid to officials in similar positions in other States:

Ohio.....	\$3,500
Ohio, assistant secretary.....	3,000
Rhode Island.....	3,000
Pennsylvania.....	10,000
Massachusetts.....	5,000
Indiana.....	3,000
California.....	3,600
Louisiana.....	5,000
Wisconsin.....	3,000
Washington.....	3,600

Of the above it must be remembered that not all are required to devote their entire time to the duties of secretary, but are permitted to take private practice or occupy some teaching position in local universities.

In those States of which there is a record at hand, the following pay the same salary as the State of Maryland: Michigan, New

Jersey, and Kansas. In the latter instance, the secretary is also dean of the Kansas University medical department, and as such receives \$4,000 in lieu of any other salary from the State; therefore, the salary of secretary remains undrawn.

Duties of the secretary.—The duties of the secretary as specified by law may be summarized as follows:

1. To keep a record of the transactions of the board and an account of all expenditures.
2. To correspond and consult with other boards and with local boards of health to secure an interchange of useful information.
3. To keep a record of correspondence of all reports received from such boards.
4. To prepare necessary blank forms and forward them to the several local boards of health around the State.
5. Upon request of local boards to visit their districts and investigate the cause of any existing diseases.
6. To make special investigations of public hospitals, asylums, etc.
7. To advise in regard to the location of drainage, etc., of any public institution or building belonging to the State.
8. Through the annual report or otherwise to disseminate information among the people. (Sec. 5, art. 43.)
9. To collect information concerning vital statistics and to act as State registrar of vital statistics. (Secs. 5 and 6, art. 43.)
10. During the existence of any epidemic or unusual sickness or mortality to cooperate with and aid the local health authorities in making scientific and practical investigations into the cause or causes of any existing diseases and in advising the most efficient means for its restriction or its suppression. To this end he may exercise all of the powers of the State board of health. (Sec. 29, art. 43.)

As executive officer of the board of health, the governing body, it is the duty of the secretary to see that the wishes of the board are carried out. Being subordinate to the board, he can take the initiative only under certain conditions of emergency, although it must be repeated that the present board will and does support any action taken by its secretary. Ordinarily, however, his actions must be approved by the board.

Many men occupying such a position would prefer to defer action awaiting instructions from the board which means delay, as some boards do not meet even once a month. Public-health work, above all others, requires that some one shall be on duty all the time, and the person or persons who act in the authoritative capacity should be within reach at least during all reasonable hours. It would be manifestly ill advised to employ seven controlling heads to be present all the time, and it seems equally ill advised to employ seven controlling heads to meet at lengthy intervals, while the man who is ready to take action at all times is without that supreme authority necessary to secure prompt and efficient results.

Not the least important duty of the secretary, acting as executive officer, is to coordinate the work of the different bureaus comprising the department, and by exerting a controlling and directing influence

to secure cooperation among the bureaus and thus accomplish the best results from the operations of the department. Without such an influence, each bureau chief is apt to consider that his work is the only important work in the department.

All reports from bureau chiefs should be made to the secretary, and no information contained in these reports should be made public until released by him. Otherwise, it will not infrequently happen that a report may be made by the chief of one bureau relating to a subject regarding which another bureau has already expressed an opinion. It is necessary for the secretary to determine that the two opinions do not conflict and therefore will not bring discredit on the department after publication.

Another important duty of the secretary is to originate or collect ideas for the approval of the board, which, when put into effect, will play some part in the advancement of public health.

ATTORNEYS FOR THE DEPARTMENT.

There are two attorneys appointed as the legal advisors of the board of health in addition to the attorney general for the State, who is a member of the board. He, however, rarely attends meetings of the board and is seldom asked to express any opinion.

Of the two attorneys who are employed, one is known as the special counsel and receives \$1,200 a year; he has little to do as there is not sufficient legal work for two attorneys. The other, who is known as the general counsel, receives \$1,500 a year and attends to most of the legal work of the department.

The duties of the attorneys are not defined by law. The general counsel attends board meetings, gives advice relative to legal procedures, gives interpretations of existing laws, draws up proposed legislation, files complaints with the State's attorney, acts in court as attorney for the board, or assists the State's attorney in trying cases, and is a member of the board which gives hearing in cases of suspected violation of the food and drugs act.

OFFICE HOURS OF THE DEPARTMENT.

Except in the chemical laboratory, the office hours are from 9 o'clock a. m. until 4 o'clock p. m., with one hour for lunch. This means a day of but six working hours. In the chemical laboratory the hours of from 9 until 5 are observed, making a day consist of seven working hours. On Saturday the department closes at 1 o'clock during the entire year.

The question of lengthening office hours is now under consideration, but it would seem reasonable on general principles and practices to require that for office employees a day consist of seven working hours, while for those in the field where work is not confining, eight

working hours should not be too much, with the understanding that any bureau chief in emergencies may, with the approval of the secretary, require overtime from any or all of the employees working in his bureau.

Exactly which hours of the day or the night are to be devoted to work depends upon the nature of the employment or the exigencies of the service. It should be within the powers of the bureau chief to grant permission to an employee to occasionally leave earlier than usual when by so doing official work will not be interfered with.

The State department does not require that its chiefs of bureaus shall conform to any stated hours in the performance of their official duties, so that while some of the chiefs may be found in their offices, or otherwise engaged in official work, during a full daily period, others perform their duties in a few hours. Where officials are employed in schools or colleges as professors or instructors on subjects for which by reason of their line of work they are especially fitted, the time absent while engaged in such outside work might well be considered as an absence on account of official duties, so long as such duties take but a small part of their time. Men who occupy such positions are advancing the interest of public health and sanitation.

No compensation for overtime, either as extra pay or extra vacation is allowed, nor does it seem to be necessary that such should be the case. The length of time that should be given for eating lunch is a matter of opinion, some States allowing an hour, or even an hour and a half, while in other States, a half hour is deemed sufficient.

During the year three weeks' leave of absence is allowed to each employee with full pay.

THE ANNUAL REPORT.

A perusal of the annual report for 1912 discloses the fact that there is much in it which could well be left out without curtailing its value. The essential object of such a report should be to record the transactions of the department in relation to time and their legal bearing and to present a summary of the progress of public-health work. The main facts reported by the different chiefs of bureaus should be incorporated into the report of the secretary and reports from the chiefs of bureaus should be condensed and summarized.

For instance, in the report referred to 37 pages are taken up by the reports from county and town boards of health and town health officers. Many of these reports are valueless, and many local jurisdictions are not reported upon at all. This simply indicates the lack of control which the State department has over them. It would seem best to leave out altogether, or include brief summaries of any pertinent facts contained in them in the secretary's report. Sixty-four pages of the report are taken up with the details of sanitary

surveys and investigations. These could well be condensed and presented in the form of summaries.

The account of the prevalence of communicable diseases as given under the heading, "Bureau of communicable diseases," takes up 68 pages. The account is in the main somewhat complicated and confusing. The subject is important and might with advantage be recorded in such a manner as to be more readily comprehended.

A financial report should be included.

It would be quite possible to greatly reduce the size of the annual report, not only reducing the expense for printing thereby, but also making it more valuable, in that much would be left out that now disheartens the reader in attempting to get the facts, while at the same time these facts would be very much clearer.

The present volume is so large that the money appropriated for its publication, namely, \$500, does not cover the expense of printing, and the difference has to be made up from funds of the department. Furthermore, it is not possible to have a fewer number published, as the law requires that 2,000 copies shall be issued, and the comptroller has ruled that unless 2,000 are obtained he will not approve the bill for printing.

It would appear advisable, therefore, to limit the size of this report so that it can be published with the funds provided, and any additional funds for printing might better be devoted to the publication of educational bulletins, as recommended in another part of this report.

The bureau of sanitary engineering and the division of food and drugs each have separately printed that part of the report relating to them. This would seem to be an unnecessary expense, although there may be circumstances which make it justifiable.

Bureau of Communicable Diseases.

Chapter 560 of the acts of 1910 of the State of Maryland, by adding sections 21a and 21g to article 43 of the code of public general laws, authorized the formation of a bureau of communicable diseases in the State department of health and authorized the department to appoint a chief and assistant chief of the bureau. In accordance therewith this bureau was organized in 1910. Its personnel and their respective salaries at the present time are as follows:

Assistant and acting chief.....	\$1, 800
One clerk.....	600
One clerk.....	420
One clerk.....	300
One stenographer.....	600
One inspector.....	1, 000
	<hr/>
	4.720

Duties of the bureau.—The duties of the bureau are defined by section 21b of the above-mentioned act as follows:

1. To secure accurate and complete returns of communicable diseases.
2. To examine into the prevalence and cause of such diseases and devise means for their control.
3. To examine into and investigate epidemics and nuisances and devise means for their control.
4. To publish monthly a bulletin for health officers.
5. To perform such other duties and exercise such other functions as the State board of health, or the secretary thereof, may designate.

NOTIFICATION OF DISEASES.

Requirements of law.—In conformity with existing laws, house holders are required to report immediately to the local board of health cases of smallpox, diphtheria, membranous croup, scarlet fever, typhoid fever, typhus fever, measles, mumps, whooping cough, or any other infectious or contagious disease dangerous to the public health. A penalty of not to exceed \$100 is provided for failure to report. (Sec. 50, art. 43.)

The law also requires physicians to report immediately to the board of health of the city, town, or county cases of smallpox, diphtheria, membranous croup, scarlet fever, typhoid fever, typhus fever, yellow fever, measles, whooping cough, or other contagious or infectious diseases dangerous to the public health. The penalty for not reporting is a fine of not less than \$50 nor more than \$200. (Sec. 51, art. 43.)

Local boards of health must keep records of all cases reported to them, by name, locality, disease, date, name of person reporting, and record of quarantine, isolation, disinfection, or other preventive measures, and must notify the school board. (Sec. 52, art. 43.)

Any board of health upon receiving notice of any case of smallpox or other contagious or infectious disease dangerous to the public health shall, within 24 hours, notify the State board of health. (Sec. 53, art. 43.)

Tuberculosis.—In addition to the foregoing a separate law requires special reports of cases of pulmonary and laryngeal tuberculosis to the State department of health.

The department must keep a register of all these cases, which shall be confidential. (Sec. 56, art. 43.)

The superintendent or other person in charge of institutions which are supported in whole or in part from public funds must report all cases of pulmonary and laryngeal tuberculosis in these institutions. A penalty of not more than \$25 is provided for noncompliance. (Sec. 57, art. 43.)

Physicians must also report, within seven days, to the State board, all cases under their professional care; a penalty of \$10 being specified for not doing so. (Sec. 58, art. 43.)

Occupational diseases.—An act passed by the legislature in January, 1912, adds section 5a to article 43 of the Code of Public General Laws of Maryland and requires that every physician attending or called to visit a patient whom he believes to be suffering from poisoning from lead, phosphorus, arsenic, or mercury, or their compounds, or from anthrax, or from compressed-air illness, or any other ailment or disease contracted as the result of the nature of the patient's employment, shall send to the State board of health a written notice stating the name and full postal address, place of employment of the patient, and the nature of the occupation and the disease from which, in the opinion of the physician, the patient is suffering, with such other information as may be required by the State board of health. For failure to so report a fine not exceeding \$5 is provided. The law also requires the State board of health to submit such data as may be received to the bureau of statistics and information of the State of Maryland.

Ophthalmia neonatorum.—If at any time within two weeks after the birth of any infant one or both of its eyes or the eyelids become reddened, inflamed, or swollen, or discharge pus, the midwife, nurse, or person other than a legally qualified physician in charge of such infant shall refrain from the application of any remedy for the same, and shall immediately report such condition to the local health officer or to some legally qualified physician in the city, town, or county wherein the infant is cared for. Any person or persons violating the provisions of this section shall, on conviction, be punished by a fine not to exceed \$5. (Sec. 55k, art. 43.)

Puerperal sepsis.—Every person not a legally qualified physician, practicing as midwife or acting as attendant upon woman in childbed in the State, who shall find any lying-in woman to have fever, shall forthwith notify the local health officer, and shall refrain from attendance upon any other parturient woman, or woman in childbed, until the local health officer shall give written permission to resume such practice. (Sec. 55, art. 43.)

Collection and disposition of reports.—Regular printed forms are used for morbidity reports; one for smallpox, one for tuberculosis, one for occupational diseases, and one for all other reportable diseases. The card forms used in reporting tuberculosis and occupational diseases are transmitted direct to the State department of health. Reports of other diseases are sent direct to the respective local health officers. Tuberculosis and occupational diseases are the only ones which are reported to the State department of health from the city of Baltimore. Other diseases occurring in that city are reported to the Baltimore commissioner of health, but no report of them is sent by him to the State department.

Typhoid fever, etc.—The local health officer transcribes the information from the report cards received by him to a daily report, which is sent to the bureau of communicable diseases and there filed away by counties and months. At the end of each month the information on these daily reports is transcribed, grouping the different diseases according to counties and towns. At the same time a summary is made of the information received during the month. It is this transcription which forms the monthly bulletin for health officers and which will be commented upon later as forming a large amount of unnecessary work. The daily reports properly filed make a fairly good "ready reference" when special cases are to be looked up. It would be a better plan, however, to send the original report cards to the State department of health and file a transcript in the office of the local health officer.

In addition to this monthly bulletin, a monthly report is submitted to the State board of health and to the United States Public Health Service. Daily reports are sent to the health commissioner of Washington, D. C., and the health commissioner of Baltimore City, showing the number of typhoid fever cases reported in the counties immediately surrounding their respective jurisdictions. The reports include the names of patients, in order that the authorities may more readily keep a check on any cases that appear in dairies shipping milk to Washington or Baltimore.

While there is a penalty provided in the case of physicians and householders for failure to report cases of communicable diseases, there is no penalty that the State department of health can enforce against local health officers for failure to make their reports. A great weakness in the entire health organization is in the inadequate local organization and the inadequate control of the State over county or local boards of health. There are some counties from which reports are very unsatisfactory, and there is no way under the present law that would be effective in compelling the county health officer to send in these reports as desired. However, it should be said that, in the opinion of the United States Public Health Service at Washington, morbidity reports in Maryland are better than the average and are the equal of those in any State.

Checks are kept on the thoroughness with which diseases are reported, by a perusal of the daily papers published throughout the State, by information received from citizens or officials in various parts of the State, by a study of the death certificates, and the daily reports received from the laboratory containing the results of the examinations of cultures, sputum, etc.

When the presence of disease is detected in this way and has not been reported to the health authorities, an investigation is made and prosecutions begun if necessary.

Tuberculosis.—The law requires that cases of tuberculosis occurring in the State of Maryland, including the city of Baltimore, shall be reported direct to the State department of health and that such reports are to be considered confidential. For this reason only the deaths from tuberculosis are included in the monthly bulletin.

All cards are filed alphabetically, separating them according to counties, a separate file being kept for the city of Baltimore. The cases reported by physicians are entered on cards by name under the name of the physician reporting the case.

It frequently happens that several cards are received reporting the same patient, as, for instance, the physician, visiting nurse, and an institution may each have seen the case and sent in a report.

Occupational diseases.—The law may be adequate in so far as it requires physicians to report occupational diseases, but it is lacking in a very important detail, in that it does not give the State department of health power to compel employers to do what is necessary to lessen the danger to employees of contracting disease as the result of their occupation.

Statistics of morbidity.—Morbidity reports are currently received and used in the bureau of communicable diseases. When they have served their immediate purpose of giving a knowledge of the occurrence of disease and of furnishing information necessary for its control, they still may perform a useful function compiled as morbidity statistics to show the relative prevalence of disease by months, seasons, and years, and the age, sex, occupation, race, etc., of those affected. With the present organization of the Maryland department of health this detailed statistical compilation of morbidity reports might properly be done by the bureau of vital statistics, which has the necessary equipment for making such statistical compilations. Properly compiled, with tabular and diagrammatic presentation, these statistics would make readily available information of much value.

Morbidity reports are probably the most valuable data that come to a health department. They have both an immediate and a remote value. The immediate value is that which enables the health officer to learn promptly of the existence of disease, to take prompt suppressive measures, to study the progress of epidemics, and to keep track of cases on his spot maps and the like. The remote value relates to the statistics of diseases, i. e., compilation and tabulation with reference to locality, age, sex, color, etc.

While all statistical tables and reports would, as recommended, ultimately be worked up by the bureau of vital statistics, reports of diseases should come first to the bureau of communicable diseases, the bureau which is primarily concerned in the control of disease.

Diseases of interest to the public health officer might be grouped as follows:

1. Communicable diseases (infectious and contagious), such as tuberculosis, typhoid fever, measles, syphilis, and ophthalmia neonatorum.

2. Occupational diseases, such as caisson disease, phosphorus poisoning, and anthracosis.

3. Dietetic diseases, such as beriberi and possibly pellagra.

4. Mental diseases requiring State care, such as imbecility, idiocy, and insanity.

5. All other diseases.

It is unfortunate that State laws generally do not require the reporting of any but those diseases which come under the first and second classes, and only 15 States require the reporting of occupational diseases. It is true that a few States require the notification of pellagra, and in some States, including Maryland, it is reported voluntarily by physicians under that section of the law requiring the notification of "infectious," "contagious," or "communicable" diseases.

Much valuable data relative to morbidity is lost to the health authorities by failure to report, and while it might seem extreme to require physicians to submit morbidity reports of all cases of sickness under their charge they should report promptly cases of communicable diseases, and it at least would not be out of place or asking too much to require all hospitals or institutions within a State where provision is made for treating the sick to submit a monthly report of all cases of illness coming under their observation.

Communicable diseases developing in Maryland but receiving their infection in another State should be reported and the health officer of the State from which they came notified. This is one way that a State can cooperate with another, and no doubt the information received would be valuable to the health department of that State. There is, in fact, too little cooperation between the several States.

In studying laws relative to the reporting and control of disease, one is impressed with the use of the terms "infectious," "contagious," and "communicable." These words seem to be used without regard to their true meaning.

An infectious disease is one due to the introduction into the body of any living animal or vegetable organism, capable by its growth or multiplication of producing a change in the function or structure, or both, of one or more organs or tissues.

A communicable disease is a disease capable of being transmitted directly or indirectly from a person suffering from that disease to another person. It must, therefore, be caused by a living organism and is, therefore, an infectious disease.

The term "contagious" is one which has no place in modern health nomenclature; it indicates a disease that is transmitted by touching or by merely being in the vicinity of a patient. As more becomes known about the methods of transmission of disease, "contagious" diseases become fewer and fewer.

The laity can understand the term "communicable" and it implies as well, "infectious" and "contagious." It would seem, therefore, to be the proper word to use for this class of diseases.

As a matter of fact, as far as the wording of any law requiring the reporting of disease is concerned, it is perhaps better to adhere to the words "notifiable disease" or "any disease notifiable under the act," as a law might well include diseases which were possibly not communicable, as for instance, pellagra, which may, after all, be a disease due to diet.

THE CONTROL OF DISEASE.

The control of disease including its epidemiologic study is also a function of the bureau of communicable diseases.

General requirements of laws.—Whenever the State department of health has cause to believe that there is any cholera, smallpox, or other contagious or infectious disease invading the State, it is its duty to take such action and enforce such rules and regulations as may be necessary to prevent the introduction and spread of such disease. For violation of any rule or regulation so made, penalty of not to exceed \$500 is provided for each offense. (Sec. 21, art. 43.)

Whenever any local health officer receives reliable notice or otherwise has reason to believe that there is a case of cholera, smallpox, or other disease dangerous to the public health, he is required to investigate and to take all proper steps to suppress such disease. County commissioners are authorized to incur and pay all necessary and legitimate expenses therefor.

Health officers are required to promptly notify the secretary of the State board of health of the existence of any epidemic or "unusual sickness or mortality." It is the duty of the secretary of the State board to cooperate, and in such cases he may exercise all the powers of the State board of health. (Sec. 29, art. 43.)

On the certificate of a qualified practitioner, the health authority of any city or town, or justice of the peace for any county, may, when necessary, require the owner or occupant to cleanse or disinfect any house and the articles therein. For failure to comply, the owner or occupant is liable to a fine of not less than \$5 and not more than \$10 for every day during which he or she continues to make default.

The same officials also have authority in case of default as above to clean and disinfect and charge the expenses against the owner or occupant. If he is an indigent, the city, town, or county must pay expenses. (Sec. 30, art. 43.)

The same authorities may direct the disinfection or destruction of bedding, clothing, or other articles exposed to infection, and may compensate the owner for any loss. (Sec. 31, art. 43.)

Section 32 of article 43 gives the authorities power to remove, under certain conditions, patients suffering from communicable diseases to an isolation hospital, when such hospital is provided, at the cost of the city or county. The penalty provided for disobeying an order is a fine of not less than \$50 nor more than \$200, or imprisonment in jail for not less than one month nor more than six months.

Section 33 of article 43 provides a penalty not exceeding \$500, or imprisonment not exceeding 12 months, or both, for anyone who, while suffering from any dangerous infectious disorder, wilfully exposes himself or herself in any public place or conveyance, or who disposes of any article which has been exposed to infection without previous disinfection.

Section 34 of article 43 provides a penalty of not exceeding \$100 for carelessly carrying about children or others afflicted with infectious diseases, or knowingly introducing infectious diseases into another person's house, or permitting such children to attend school or other public places.

Section 35 of article 43 provides a penalty of not exceeding \$25 for failure on the part of a driver of a public conveyance to immediately have such conveyance disinfected after carrying any person suffering from a dangerous infectious disorder, or a corpse dead of such disorder, and provides further that he shall not be required to convey such person or corpse unless reimbursed a sufficient amount to cover the cost of disinfection.

Section 36 of article 43 provides a penalty not exceeding \$250 for knowingly letting for hire any house, room, or part of a house which has been occupied by any person suffering from any dangerous infectious disorder, without previous disinfection, and a penalty of not exceeding \$500 for the making of any false statement relative to the above.

Section 37 of article 43 relates to the retention of bodies of persons dead of infectious diseases or any dead body which is in such a state as to endanger health in rooms and permits the authorities to order their removal and burial at city, town, or county expense, if necessary. Any person obstructing any order for removal and burial is liable to a fine not exceeding \$200, or imprisonment not exceeding six months.

Section 38 of article 43 gives the authorities power to build, or contract for the building, of hospitals or other places for the care of the sick. Two or more local authorities are authorized to join in providing a common hospital.

Section 39 of article 43 permits the authorities to charge patients who are not paupers for such hospital treatment.

Section 54 of article 43 requires that where any doubt exists as to the diagnosis of any disease believed to be of an infectious or contagious character the matter shall be reported to the State department of health which shall make all necessary investigation, and the State bacteriologist is required to render to local authorities and practicing physicians all assistance necessary in making a diagnosis, and to the State vaccine agency in testing vaccine.

Section 50 of article 43 provides that upon the death, recovery, or removal of any person or persons suffering from smallpox, diphtheria, membranous croup, scarlet fever, typhoid fever, typhus fever, measles, mumps, whooping cough, or any other infectious or contagious disease dangerous to the public health, such of the rooms of said house and such articles therein as, in the opinion of the local board of health, have been subjected to infection or contagion, shall be disinfected by the said board of health, and a written statement of the fact of such disinfection shall be given to the householder.

Health regulations.—In accordance with the authority conferred upon it by law, the State board of health, has from time to time issued regulations relating to the control of communicable diseases. These regulations are to set forth in greater detail these precautions that are to be taken, in order to comply with existing law, and they will subsequently be referred to in discussing the subjects to which they relate. Mention may here be made, however, of one regulation specifying the time during which children suffering from certain diseases are to be excluded from school and what precautions are to be taken to prevent the spread of the infection to other children. Scarlet fever, measles, diphtheria, whooping cough, mumps, chickenpox, scabies or itch, ringworm, and typhoid fever are considered.

Tabulation of regulations relative to the control of communicable diseases.

Disease.	Patient.		Contacts.		Certificate from doctor required before admission to school.	Disinfection.	Placarding.
	Isolation.	Exclusion from school.	School attendance.	Isolation of bread-winners.			
Scarlet fever...	28 days from date of onset.	Same period as for isolation and until disinfection is completed.	Excluded for 28 days, or if removed from house, 8 days.	Not necessary if they do not come in contact with patient, bedding, etc.	Yes.....	House and clothing at termination of period of isolation.	According to regulations of local board of health.
Diphtheria.....	Until 7 days from disappearance of signs and symptoms if at that time culture is negative. 14 days from disappearance of rash. As long as symptoms persist.	Same.....	If not living in infected house but exposed to infection, may attend after one negative culture is obtained. Excluded until patient is released.	.....	Yes.....	According to regulations of local board of health.	Same.
Measles.....	Same.....	Same.....	Excluded if cough is observed unless certificate from physician states not whooping cough.	.....	Yes.....	At the termination of the period of isolation.	Same.
Whoopingcough	Same.....	Same.....	.....	.....	Yes.....	According to regulations of the local board of health.	Same.
Chickenpox.....	As long as scales or crusts remain.	Same.....	.....	.....	Yes.....	Of clothing.....	Same.
Mumps.....	Until 7 days after the disappearance of all symptoms.	Same.....	.....	.....	Yes.....	According to regulations of the local board of health.	Same.
Scabies.....	Until cured.	Until cured.	.....	.....	Yes.....	Of clothing.....	.....
Ringworm.....	.....do.....	.....do.....	.....	.....	Yes.....	.....	.....
Typhoid fever..	.....	.....	Not excluded, but may not bring to school any food or drink.	.....	Yes.....	.....	.....

Circulars of information.—Some very good circulars have also been published and distributed relating to the subjects of tuberculosis, diphtheria, measles, scarlet fever, whooping cough, and typhoid fever. These are all written in simple language and are intended to be sent to each householder where a case of the disease is present.

Investigations.—For the enforcement of the above-mentioned provisions of law, and those to be referred to subsequently under special headings, the department has authority to have its officers visit different sections of the State.

Certain inspections and investigations relative to the prevalence of diseases and nuisances are thus carried on from time to time during the year by the acting chief of the bureau, who is also frequently called upon to act as an expert in the diagnosis of communicable diseases, but much of his time is taken up with routine office work. One or more of the inspectors of the department are detailed from time to time with this bureau for special investigations relative to the prevalence of diseases, nuisances, or failure to report diseases.

There is no intention in the foregoing statements to underrate the work conducted in the central bureau. Much of this work is undoubtedly of distinct value to the State, but on account of lack of adequate field forces, the office is not able to discharge all the duties that should be expected of it.

Lack of field officers.—In order to control outbreaks of disease there is necessity of an adequate field force to take the required precautions when the local authorities are unable to do so. While the department of health is frequently asked by county or municipal health authorities for advice relative to the suppression of an outbreak of a communicable disease such as diphtheria, the actual work involved in its eradication is usually left to the local authorities, due to the absence of a properly organized field force. Owing to this the department is unable to take the active part that it should in such emergencies.

The laws relative to the control of disease place the matter largely in the hands of the local authorities, but nevertheless with a better field force the State could give necessary supervision which would no doubt be welcomed by the cities and counties.

Disinfection.—The enforcement of the law relating to disinfection is left to the local health officer. Except for tuberculosis, he does not have to report that the same has been done. After disinfecting for tuberculosis he reports by a check after the name on the mortality report sent to him every month, and he returns this report to the State department of health.

Terminal disinfection is practiced in all the communicable diseases, the favorite and recognized disinfectant for this purpose being

formaldehyde gas generated by some approved method. The department of health of Baltimore City uses the solid paraformaldehyde, with the addition of heat, as a disinfectant in all cases of communicable diseases, and control cultures are exposed in the rooms undergoing disinfection.

Tuberculosis.—As previously stated, cases of tuberculosis of the lungs or larynx are required by law to be reported. By the adoption of such a law Maryland showed her desire to be in the front rank in the control of the disease. In fact, Maryland was the first State to have such a law, and it has been in force since 1904.

In addition to requiring reports, this law contains a number of other provisions.

After vacation by death or removal, apartments occupied by consumptives are required to be disinfected. Disinfection is to be done by the local board of health. It is the duty of the householder, physician, or other person to notify the board of health of such death or removal within 48 hours. A penalty of \$10 is provided for non-compliance. (Sec. 59, art. 43.)

No apartment that has been occupied by a consumptive can be let or hired without the above disinfection, and a penalty of \$25 is provided. (Sec. 60, art. 43.)

Anyone who is suffering from pulmonary or laryngeal tuberculosis, pneumonia, or influenza is required not to dispose of his sputum so as to endanger others. For violation of this provision a penalty of \$10 is specified. (Sec. 61, art. 43.)

The physician attending any case of pulmonary or laryngeal tuberculosis is required to see that all the necessary precautions are taken to prevent the spread of the disease, and if no physician is in attendance this duty devolves upon the local board of health. (Sec. 62, art. 43.)

Section 63 of article 43 relates to the methods to be pursued in the prophylaxis, amount paid to the physician, etc. The details of administration are mentioned later.

For intentionally falsely reporting a case as tuberculosis there is imposed a fine of \$100, or imprisonment not exceeding six months, or both. (Sec. 64, art. 43.)

The State board is authorized to prepare and keep on hand necessary circulars, blanks, etc., and for the defraying of expenses in connection with the control of tuberculosis there is appropriated the sum of \$5,000 annually. (Sec. 65, art. 43.)

It is unlawful for any person to expectorate or spit on the floors, sides, seats, or platforms of any railway or railroad passenger car in the State under penalty of \$3 and costs, one-half of said fine to go to

the informer or party arresting and furnishing the evidence upon which the offender is convicted. This section further provides an exemption in the case of smoking cars where cuspidors are not furnished by the company. (Sec. 238, art. 27.)

A regulation of the State board of health makes it a duty of the patient, nurse, attendant, or householder to dispose of the sputum from a case of tuberculosis so that the health of others will not be endangered and to otherwise carry out the instructions given by the attending physician.

Upon receipt of a card reporting a case of tuberculosis, a blank form is sent to the attending physician requesting him to fill in the information required and to indicate whether he desires a prophylactic package to furnish to the patient, such packages being supplied by the bureau of communicable diseases free of charge. If he does, instructions are sent to one of the stations (of which there are 142 throughout the State), which keep these packages on hand, to issue one to the physician. If the physician can not assume charge of the prophylaxis, he so indicates on the blank form, and the responsibility then devolves upon the local board of health.

Any physician who is willing to see that the patient receives the prophylactic package and is willing to give the necessary instruction to the patient and contacts to prevent the spread of the disease is entitled to a fee of \$1.50 from the State department of health. A check for this amount is sent to the physician after the local health officer has certified in the blank mentioned above that the physician has taken all precautions required. The fee is paid in the case of laryngeal or pulmonary tuberculosis only, and in either case tubercle bacilli must be found in the sputum, showing the disease to be in the active stage.

As the reports of tuberculous persons are confidential, the names are not published, and it therefore becomes necessary for the local health officer to certify that the attending physician has performed his duty in connection with a case of tuberculosis without himself knowing the identity of the patient. Under such circumstances certification is unsatisfactory. The confidential clause could be properly observed without detriment either to the interests of the patient or the public if the county health unit were a part of the State department of health.

As is the case with the reporting of other diseases, much trouble is experienced in getting physicians to answer all the questions asked in the blank concerning tuberculosis.

Antituberculosis packages.—In 1908 the State department of health received a gold medal from the International Congress on Tubercu-

losis for the best prophylactic package. This package is now in use and contains the following:

	Unit value.	Total value.
100 cup fillers.....	\$0.0035	\$0.35
100 Japanese napkins.....	.00062	.062
One-half pint liquid disinfectant.....	.10	.10
1 sputum cup.....	.07	.07
2 waterproof bags.....	.94	.08
1 book of information for persons having diseases of the lungs.....		
Total value of package exclusive of book.....		662

This is a supply estimated to last a patient three months, and to secure additional supplies no further authorization is required.

As showing the extent of the enforcement of this law, the following is a statement of the prophylactic supplies issued to tuberculosis patients in 1912:

Supplies issued in crates (number of packages).....	1,525
Supplies issued from the State board of health (number of packages).....	540
Supplies issued in bulk (not in packages) to the International Visiting Nurses' Association, of Baltimore city, Phipps Dispensary, etc.:	
Napkins.....	880,400
Sputum-cup fillers.....	435,800
Disinfectant.....	5,463
Tincups.....	2,040
Pockets.....	300
Books of information.....	560

In the city of Baltimore the packages are issued from the office of the State department of health. In the counties certain physicians, drug stores, etc., located in places most convenient to the largest numbers of people are designated to issue these packages, and the supplies are kept up by the State department.

While statistics show that the incidence of the disease is about the same as in previous years, it at least has not increased.

Smallpox vaccination.—The Maryland vaccination law was first enacted many years ago and was amended by an act of the assembly, approved April 5, 1900. It makes it the duty of a physician to vaccinate all children in the circle of his practice who may be presented to him within one year after birth if such child shall be in a proper condition for such service. A penalty of \$5 is provided for refusal to vaccinate. (Sec. 43, art. 43.)

It is obligatory on the parent or guardian to have his or her child vaccinated within 12 months after its birth, if it shall be in proper condition, or as soon thereafter as practicable. Also, any parent or guardian having any other person under his or her control or care not duly vaccinated, shall cause such person to be vaccinated prior to the 1st day of November. (Sec. 45, art. 43.)

The law prohibits children from attending public school unless they have been successfully vaccinated. (Sec. 46, art. 43.)

Further provisions of the law are that, if practicable, no vaccine shall be used more than four removes from the cow; that the vaccine shall be furnished free of charge to physicians and surgeons of the State; that the State vaccine agent may make use of a human virus not to be taken from the arm of a child less than three months old; that any physician who shall knowingly or willfully use any virus defective in its nature by having passed through a scrofulous system, or having been taken from one with any disease of the skin, chronic sore, or other disease, during the progress of the vaccine disease, or shall use any crust which during the progress of the vaccine disease was punctured or otherwise injured, shall be subject to a fine of not less than \$100 nor more than \$500 for each offense.

Physicians vaccinating indigent children are entitled to a fee of 50 cents from the county commissioners or city of Baltimore, except when vaccine physicians have been regularly appointed by the authorities.

All fines collected under the vaccination act go into the school fund.

The law has some good provisions as far as it goes, but is antiquated and needs revision. The law is adequate as far as the primary vaccination of children is concerned. In the case of adults, however, there is no provision compelling them to submit to vaccination, or of compelling anyone, except children who wish to attend school, to be successfully vaccinated, except possibly the general law which gives the board of health the power to take all proper steps for the restriction or suppression of "communicable diseases." (Secs. 3-8-14, art. 43.)

There should be some provision whereby every person in the State of Maryland would be compelled to submit to vaccination as many times as necessary to produce a successful vaccination, or until it was proved that they are not susceptible to the virus; and in the event of the appearance of smallpox, or the threatened appearance, as many times as may, in the opinion of the health officer, be necessary to produce immunity in persons who have not been successfully vaccinated within the preceding two years.

The problem of handling vaccine is under what is known as the State vaccine agency. This has been in existence for more than 30 years. At the time the law forming this agency was passed it was no doubt a satisfactory method, and it was contemplated at the time that the vaccine should be made by the State. The vaccine so made, however, did not prove satisfactory and at present it is being bought from reliable firms.

Vaccination is of the greatest importance to the State department of health which has to handle smallpox outbreaks, and, as it is now in a position to purchase and dispense vaccine so as to secure the best possible results, the enforcement of vaccination and the supplying of vaccine should be entirely under its charge.

The vaccine agent receives \$600 a year for his services. By transferring his duties to the State department of health his salary could be saved, and the supplying of vaccine thus accomplished at less expense to the State.

That the present method is not satisfactory is evidenced by the fact that many counties purchase their vaccine from commercial establishments in preference to depending on the vaccine agent.

The State department of health, although vitally interested in the subject, at present receives few or no reports relative to vaccination. The agency must keep a record of the names of the doctors to whom vaccine is issued and the amount, but no reports are required as to the use the vaccine has been put to by those to whom it has been issued or the results obtained. It is, of course, extremely important to have such information, and there should be a full report sent to the department of health by each vaccinator relative to the number of people vaccinated and the results.

Typhoid fever.—In addition to receiving reports of cases and making investigations of particular outbreaks, the bureau of communicable diseases does not exercise much direct control, the actual enforcement of measures devolving upon the local authorities.

The State department of health, however, issues two circulars on typhoid fever, one of which is intended to accompany a prophylactic package furnished by the city of Baltimore for distribution to families having the disease and living on the watershed from which the city water supply is obtained. This prophylactic package contains the following articles:

Expendable:

- Two 5-pint bottles 90 per cent carbolic acid.
- One bottle bichloride of mercury (200 tablets) (one to pint, 1-1,000 sol.), Green.

Nonexpendable:

- One bedpan.
- One urinal.
- Two 5-gallon iron or fiber buckets (with covers).
- One agate-ware measure.
- One enamel-ware basin.
- One large mosquito netting.
- Two bile-culture mailing outfits for feces and urine.
- Two copies General Order, No. 39.
- Three copies directions for the use of the standard prophylactic package for typhoid fever.

The above materials are sufficient for 28 days, or 4 weeks.

The State department of health also issues free of charge to any physician in the State requesting it a prophylactic package containing the following:

- Six $\frac{1}{2}$ -pint bottles of an approved disinfectant.
- Two hundred tablets of bichloride of mercury.
- Four bile-culture mailing outfits for feces and urine.

In this instance the family in which the typhoid fever has occurred furnishes the nonexpendable articles, as it would be a great expense to the State to issue these materials over such a large territory, knowing that many times they could not be recovered.

The State department of health also strongly advocates the use of antityphoid vaccine and furnishes it free of charge to physicians.

The extent to which this is done is shown by the fact that 1,917 complete immunizing doses were furnished during 1912.

For the convenience of physicians who wish to have biological investigations made, there are a number of so-called culture stations in different parts of the State where culture tubes, swabs, and mailing outfits may be obtained to transmit specimens for examination in the bureau of bacteriology. There are also three pamphlets of information which are sent to the practicing physicians throughout the State, one of which gives information concerning the laboratory service and outfits with special reference to the correct method for collecting and forwarding specimens to the laboratory; one is a circular of information relative to the use of antityphoid vaccine, and one gives directions for sterilizing stools and urine in cases of typhoid fever, paratyphoid fever, dysentery, and other infectious diseases. Copies of these circulars also accompany the prophylactic package.

As a means to the better control of typhoid fever, the State board of health has promulgated two regulations. The first prohibits the use of night soil as a fertilizer except when mixed with at least an equal volume of lime, earth, or other inert material and covered with at least 2 inches of earth. It also prohibits the sprinkling of growing vegetables with night soil and declares that vegetables so treated are diseased, unsound, and unwholesome, and subject to condemnation and destruction by an inspector of the department.

The second regulation requires householders, physicians, nurses, or attendants to disinfect the stools and urine of persons known or suspected to be sick of typhoid fever or convalescent from said disease, during the full period of sickness and convalescence.

The regulation relating to the disposal of night soil for fertilizer permits a practice which it is impossible to properly control and which is consequently dangerous. It should therefore be rescinded.

Hydrophobia.—In January, 1912, the legislature passed an act (ch. 204) authorizing the State board of health to either prepare or purchase antirabic virus, and to furnish treatment to indigent persons

who have been exposed to the infection of hydrophobia, either in the counties or in the city of Baltimore. As the act also authorizes the State board of health to contract with some Pasteur laboratory to furnish the treatment, this is the method pursued.

Treatments are furnished by the Pasteur Institute, College of Physicians and Surgeons, Baltimore, Md., at \$60 per treatment, with the understanding that if the number of patients should exceed the appropriation, all those in excess will be treated free of charge. Two thousand five hundred dollars annually is appropriated to carry on this work.

This is thought to be an economical arrangement, as it would cost the State probably more than \$2,500 to organize and maintain a Pasteur laboratory. A more economical and probably just as satisfactory arrangement would be to secure the antirabic virus from the United States Public Health Service.

Common drinking cups.—In January, 1912, the State legislature passed an act (ch. 156) prohibiting the use of the common drinking cup in all public places within the State and upon all railroad trains and boats carrying passengers within the State, and giving the State department of health full authority to establish necessary and reasonable rules and regulations. For failure to observe the provisions of this act, a fine of not exceeding \$25 for each offense is provided.

A regulation of the State board of health defines the term "common drinking cup" and "public places" and otherwise states what is prohibited under the above-mentioned law.

Discussion.—The most important functions of the bureau of communicable diseases should be to investigate, suppress, and prevent disease. For these purposes it should receive constantly information regarding the prevalence of diseases and this should be made a daily study. In keeping track of particular outbreaks, the spot maps are very valuable and should be made use of. A system whereby cases can be followed up is also advisable or even necessary for thorough work. This is not now done.

It is necessary that the biological laboratory and the bureau of communicable diseases cooperate, as the bureau not only frequently depends upon the laboratory for a diagnosis, but in many instances by receiving the results of laboratory examinations will learn of unreported cases of diseases.

Some physicians consider that they have reported a disease according to the law when they have submitted a specimen to the laboratory and obtained a positive report. The examination is made for the convenience of the physician, and does not relieve him of the obligation to report the disease in the correct way.

The duties of this bureau in combating disease should include investigations and operations in the field, publication of the laws and regu-

lations of the department and their distribution, careful supervision over local authorities, and the ability to send trained medical and sanitary inspectors into infected localities to assist local authorities and to enforce the laws and regulations of the department relative to reporting, isolating, quarantine, placarding, disinfection, etc.

At the present time communicable diseases are being handled by the majority of health organizations in an empirical way. This refers especially to quarantine and disinfection. As the causes and modes of transmission of communicable diseases are better understood, the uselessness and even absurdity of the old methods of quarantine and disinfection become more and more apparent.

It is the living patient who is dangerous, or to be more explicit, the discharges from the patient, while the dead body and fomites play but a small and unimportant part in the spread of disease. In typhoid fever, for instance, it is the feces and urine that disseminate the disease; in measles it is the catarrhal discharge from the eyes, throat, and nose; in diphtheria it is the discharge from the throat and nose; in scarlet fever it is probably the discharge from the throat, nose, ears, etc., and so on. It is true that the discharges may and do attach to utensils, towels, bedding, etc., but if disinfection of these soiled articles is practiced immediately, terminal disinfection is generally unnecessary.

Also in diseases like bubonic plague, typhus fever, yellow fever, and all diseases transmitted by insects, in the absence of blood-sucking insects the diseases can not spread, and terminal disinfection is useless. The periods of quarantine detention should also be modified and based on scientific observation, wherever possible, making use of laboratory methods to determine the presence of a causative organism after recovery.

The bureau of communicable diseases should take up investigations into the prevalence of such diseases as hookworm, trachoma, and malaria, and into the extent and causes of infantile morbidity and mortality, in addition to those communicable diseases which are ordinarily considered, and energetic methods should be instituted for their control.

Typhoid fever is of special importance, and in order to encourage uniformity of action and development of local health organizations the State should conduct a definite and lasting campaign against this disease, which affects all localities and the control of which involves many factors.

Maryland has taken little or no action toward studying trachoma within the State.

A certain amount of investigation indicates a probability that hookworm is almost a negligible quantity.

ABATEMENT OF NUISANCES.

Requirements of law.—In addition to the laws already mentioned, which give authority to the State board of health and the bureau of communicable diseases to investigate and take the necessary action to abate nuisances, the following laws prescribe the legal procedure to be followed:

Any two legally qualified practitioners or three or more persons affected may certify to the State board of health that a watercourse, well, spring, open ditch, gutter, cesspool, drain, privy pit, pigpen, or other place, or accumulation or deposit of offensive or noxious matter, or any house, building, or trades establishment, or manufacturing place is in a state of nuisance dangerous to health, in which case the board of health must investigate, and if found to injuriously affect an adjacent property or district, or to endanger health or life, it shall serve notice in writing on the proper person or persons to abate the nuisance within a certain time. (Sec. 74, art. 43.)

If the person maintaining the nuisance fails to abate it, or if the nuisance though abated is likely to recur, the board of health must apply to the Circuit Court for an injunction, which, if granted and not obeyed, subjects the offender to a penalty not exceeding \$10 per day during his or her default, and if willfully disobeying an order of the court to comply with the order of the State board a penalty of not exceeding \$20 a day. (Secs. 75 and 77, art. 43.)

Whenever the nuisance is created or maintained by more than one person, firm or corporation, the judge may direct by whom it shall be abated and in what proportion the costs shall be paid. (Sec. 76, art. 43.)

County health officer.—The county health officer has the power, after issuing an order in the proper way, to take persons violating that order before the local court, and there is a fine provided for failure to abate the nuisance of not less than \$1 nor more than \$10 for the first offense and not exceeding \$25 for the second offense. (Sec. 26, art. 43.)

Local boards of health are also required to take cognizance of all nuisances within the limits of their jurisdiction, and anyone refusing to comply with the requirements of the board shall be liable to a fine of not exceeding \$50. (Sec. 27, art. 43.)

The method of abating nuisances under the present law is very cumbersome, time-consuming, and inadequate so far as the State department is concerned, for it is required, after issuing a proper order to abate a nuisance, in the event of the order not being obeyed, to apply to the circuit court for an injunction. This means time lost and an unnecessary amount of labor and only remote possibilities of success.

The county health officer, on the other hand, is in a position to secure quicker results in the abatement of nuisances, for after issuing the necessary order to abate he may in the event of noncompliance bring prosecution before the justice of the peace or a local court, and no injunction proceedings are necessary. With the present organization in the counties, however, comparatively little is done toward the abatement of nuisances, and prosecutions by these officials are rare.

The State department of health conducts a great deal of correspondence relative to nuisances and gives advice in respect to their abatement, but few prosecutions are undertaken.

A nuisance from the standpoint of public health might be defined as any condition which by reason of its location or its mere existence may or does affect injuriously the life or health, directly or indirectly, of people living in the locality.

To abate nuisances a definite procedure should be practiced, consisting of:

1. An investigation and report.
2. A written order to abate, stating explicitly the nature of the trouble and what shall be done to correct it in a given time.
3. In case of noncompliance with the order to abate, two recourses should be open: (a) To prosecute before a local magistrate, or (b) where no structural changes are necessary, to perform the necessary work and charge expenses against the property.

Orders to abate nuisances should be divided into structural and nonstructural, all of the former to be handled by the bureau of sanitary engineering, the latter by the bureau of communicable diseases.

Nonstructural orders are those which in order to correct a nuisance require a cleaning up only, which may or may not necessitate the employment of laborers and horses and wagons, such as removing collections of refuse, cleaning up stables, prohibiting the use of night soil, etc.

Structural orders are those which in order to correct a nuisance require the alteration and repairs to some previously existing structure or some new construction, such as installation of plumbing, cutting windows for light and ventilation, building drainage ditches, filtration plants, placing concrete floors, construction of sewers, etc.

In a general way all nuisances requiring structural changes and all nuisances in connection with the water supply, private or public, or in connection with the disposal of sewage or refuse, should be in the hands of the bureau of sanitary engineering.

If nuisances are reported to the State board of health, they should be referred to the county health officer for investigation and action. If, in his opinion, the abatement of the nuisance involves structural changes, he should refer the matter to, or ask the cooperation of the

district engineer. It should be the duty of the county health officer or district engineer to handle all nuisances and not to refer them to the State department of health, except where advice is necessary on a certain point, or where assistance is required in matters of great importance. All nuisances investigated and orders issued, etc., should be reported to the secretary of the State board of health in a monthly report of transactions.

DISSEMINATION OF SANITARY INFORMATION.

At the present time the bureau of communicable diseases issues once a month to county health officers a bulletin consisting of a summary of the numbers of cases and character of the communicable diseases reported during the month, as compared with the previous month, and a detailed list of cases of each of the communicable diseases reported throughout the State (except in the city of Baltimore), giving the name, color, and age of the patient, duration of illness, town and county. In the case of tuberculosis the mortality list only is published, as the law requires that the morbidity reports shall be confidential.

The bulletin represents much labor in its preparation, and the results accruing from its publication must be very small indeed, as it is questionable whether more than the summary is ever read, and even though read with great care, very little of it besides the summary can be of much value to a local health officer.

It is, of course, necessary for one county health officer to know the status of communicable diseases in another county, especially in the adjoining counties, but the number of cases by disease, town, and county, is sufficient without going into details relating to the name, age, color, etc., of each patient.

The bulletin is based on information received from the local health officers. It is not printed, but is multigraphed. By greatly reducing its size, as much good would be accomplished, and time, labor, paper, and postage saved.

Except for those circulars on certain of the common communicable diseases, which have been previously mentioned, the Department of Health of Maryland does not publish any popular bulletin. A popular bulletin is deemed invaluable to instruct the people, provided it is issued so as to reach those most in need of instruction. It not infrequently happens that popular bulletins are read by persons who are in the least need of instruction and are apt to become a medium of advertisement for the health organization to show other similar organizations what is being done (on paper) for the people under its jurisdiction. This may advertise the health department, but it does not materially help or enlighten those people for whom it should be intended.

It is, in fact, difficult to reach the citizen most in need of instruction, and it is perhaps useless to attempt even to teach by bulletin the mass of the adult population. If they do not already know, they will not be inclined to take heed. There is a method, however, which, if followed, might result in great benefit. The mind of the school child is a storehouse capable of receiving large consignments of information, and this information will eventually be carried to the home and imparted to the parents. In other words, to teach the future generation is hopeful. Popular bulletins, therefore, should be mainly distributed among school children, to be taken home by them to their parents, and what is very important, the sympathies and cooperation of school teachers should be enlisted that they may explain the meaning of the bulletin. In this way it might reach both the child and the adult. It is understood that this method is being pursued in the State of Michigan. Such bulletins could with great benefit take the place of the average textbook on hygiene and physiology, as now used in the public schools.

Bulletins on the subject of public health should ordinarily have at least one illustration, which frequently impresses the reader more forcibly than the text.

To reach the adult as well as the child, popular lectures should be delivered, combined with lantern slides and moving pictures.

A public health exhibit is given every year in different parts of the State by the Medical and Chirurgical Faculty of Maryland. This exhibit consists of charts and diagrams on milk and infant mortality, the effects and consumption of alcohol, social diseases, and tuberculosis, and during the exhibit a series of popular lectures is given, and booklets on different subjects of health are distributed. There should be, and will be, other units added from time to time, taking up soil pollution, water supply, typhoid, hookworm, malaria, insect carriers of disease, dietetics, etc. The exhibit consisting mainly of charts is carried by train to the more important towns and exhibited in some public building.

It might perhaps reach more communities if it were given in a railroad car prepared for the purpose, as has been done in California and other places. It is as important to reach the small rural communities as it is the larger towns.

The State of Maryland was the first to hold a tuberculosis exhibit (1904) and the State Board of Health of Maryland was the first State board to hold a child hygiene exhibition in conjunction with the National Association for the Study and Prevention of Infant Mortality (1909), as well as the first State board to hold a milk exhibition (1906).

INSPECTION OF FACTORIES, CANNERIES, DAIRIES, PUBLIC BUILDINGS, RESTAURANTS, ETC., AND CONVEYANCES OF COMMON CARRIERS.

Except for the collection and examination of food samples, which are covered by the food and drugs act, there is little law requiring sanitary control of factories, dairies, etc., and what there is depends mainly for its enforcement upon organizations not connected with the department of health. These subjects are mentioned here, however, because of their intimate bearing on the public health and because some of them can be handled by the department when a nuisance is involved under sections 2, 26, 27, 71, 72, 73, 74, 75, 76, and 77, of article 43, and section 429, of article 27, of the Public General Laws of Maryland. These laws have already been mentioned.

The department of health in connection with the collection of samples of foods and drugs does make some sanitary inspections, and through correspondence advises in respect to the sanitation of such places.

In the sanitary control of such places there are usually four distinct problems to be considered, namely:

1. The maintenance of sanitation and cleanliness, and
2. The correction of conditions causing occupational diseases, which should devolve on the bureau of communicable diseases;
3. The disposal of wastes, the regulation of which is a duty of the sanitary engineer; and
4. The collection and examination of samples of products, which would come under the division of foods and drugs.

It is of course not expected that each bureau would send an inspector in order to determine those points in which it is interested. One trained inspector representing the department, with a blank form covering all points, should be able to attend to the matter, noting the conditions on the blanks, collecting samples, and enforcing regulations of the department.

With a properly organized county health unit, it should be the duty of the county health officials to make frequent observation of conditions, so that the department need only make occasional inspections.

There is need of a law giving the department of health the power to maintain cleanliness and to compel the proper disposal of waste products and sewage in all factories, canneries, dairies, bakeries, stables, markets, slaughterhouses, public places, etc., and to require that the necessary things be done to prevent occupational diseases. This could no doubt be accomplished by an amendment to the act requiring the reporting of occupational diseases.

Requirements of law.—There are several provisions in law for the sanitation of workshops and factories, but their enforcement devolves

on the bureau of statistics and information, which is not a part of the department of health.

Section 243, article 27, provides that all factories, manufacturing establishments or workshops shall be kept in a cleanly condition and free from effluvia arising from any drain, privy, or other nuisance; they may not be so overcrowded as to be injurious to the health of the persons employed; they must be kept well lighted and ventilated in such a manner as to render harmless as far as practicable all gases, vapors, dust, or other impurities which may be injurious to health. Section 244, article 27, provides a fine of \$150 for each offense.

Section 245, article 27, prohibits the manufacture of clothing or any other article liable to transmit infection in any place or under any circumstances involving danger to the public health. A fine is provided of not less than \$10 nor more than \$100 for each garment so manufactured, made up, or worked upon.

Section 246, article 27, provides a penalty of imprisonment of not less than 60 days nor more than one year and a fine not exceeding \$1,000 for anyone who willfully permits clothes to be made as above.

A place is deemed to be dangerous to the public health, as contemplated in the previous paragraph, if each person working therein has less than 400 cubic feet of space; if the thermometer shall habitually stand during the hours of labor at or above 80° F. before the 1st day of May or after the 1st day of October; if any person therein is suffering from any contagious, infectious, or otherwise dangerous malady; or if there is less superficial area than 500 square feet; or if any artificial light shall be habitually used between the hours of 8 a. m. and 4 p. m.; or if the débris of manufacture or other dirt shall not be removed at least every 24 hours. (Sec. 247, art. 27.)

Section 248 of article 27 provides that the society or other body furnishing information will be entitled to one-half of the fine if the person is convicted.

Section 249 of article 27 provides that no room or apartment in any dwelling house or tenement house shall be used to manufacture certain articles, except by the immediate members of the family, until a permit has been obtained. Before issuing such permit the place must be properly inspected.

Sections 250-252 of article 27 give authority to the inspectors of the bureau of industrial statistics to enter any room in any tenement, dwelling house, workshop, etc., for the purpose of inspection, and provides for the employment of deputies and imposition of fines for refusal to give information, etc.

Section 239 of article 27 provides that all proprietors or owners of retail, jobbing, or wholesale dry goods stores, notion, millinery, or other business where any female sales people or female help are

employed for the purpose of serving the public shall provide a chair or stool for each of such female help. For not providing such chairs a fine of not less than \$10 nor more than \$100 is specified for the first offense, and for further offenses fines at the rate of \$1 a day for every chair or stool not furnished to said employees.

DAIRIES AND THE CONTROL OF THE MILK SUPPLY.

The question of the sanitation of dairies and the furnishing of a pure milk in the State of Maryland, a subject of the greatest importance to the health of its people, has been placed in the hands of what is known as the State live stock sanitary board, an organization which seems to be more or less inert as affects the adequate control of milk supplies. To place a matter of such importance to the health of the community under the control of such a body is incongruous to say the least, for there is only one logical organization to govern such a matter, the body concerned in the preservation of human life; in this case, the State department of health. Because of the great part it plays in infant mortality, because it is the most important food, because of the ease with which it is contaminated and its importance in the transmission of certain common and dangerous communicable diseases, milk, of all single items, is probably the most important to the health officer.

It is granted that the live-stock sanitary board should be the body to determine the health of the animal from which the milk is obtained, but after the exercise of such function its jurisdiction over milk supplies should cease, and all supervisory powers relative to the collection, preservation, and handling of milk in the State should be vested in the State department of health.

Baltimore City has the usual and customary force to supervise the milk supply for its people, as has every other city of any importance; but a city can only adequately handle the proposition within its corporate limits. As most dairies supplying the large cities are situated without these corporate limits, the city can do little in enforcing sanitary maintenance except to prohibit milk from uncleanly dairies from entering the city or destroying or denaturing it if it shall have entered. On the other hand, a department of health with a State-wide power and an adequate force is in the best position possible to control dairies located outside the limits of a municipality.

Requirements of law.—All persons supplying milk to cities, towns, or villages are required to register their herds of cattle with the live-stock sanitary board. A penalty of not less than \$1 or more than \$20 for each offense is provided. (Sec. 20, art. 58.)

The premises where cows are kept and where the business of dairying is being carried on are required to be inspected at least once

annually without notice to the owner, and if found in an unsanitary condition, shipping of milk is prohibited. (Sec. 21, art. 58.)

In accordance with this paragraph rules have been issued governing the sanitation of dairies, of which the following is a summary:

1. Buildings shall be well lighted and ventilated; shall be provided with sufficient feed troughs, suitable floor for carrying off drainage; sewer connections where possible and necessary.

2. No water-closet, privy, etc., inhabited room, or workshop shall be located within any building or shed used for stabling of cows for dairy purposes or for the storage of milk or cream, and no fowl, hog, sheep, or goat shall be kept therein.

3. Such premises must be kept in clean and good repair and well painted or white-washed at all times.

4. All manure must be removed, so as to prevent its accumulation in great quantities.

5. A sufficient number of receptacles made of nonabsorbent material must be kept for reception, storage, and delivery of milk. They shall be cleaned and purified, and all milk shall be removed without delay from rooms in which cows are kept.

6. Cows shall be cleaned every day and be properly fed and watered with an abundance of pure, clean water.

7. All inclosures in which cows are kept shall be graded and drained, so as to keep the surface reasonably dry.

8. No garbage, fecal matter, etc., shall be allowed to remain in such inclosure unless sufficient straw or good absorbent materials be used to keep the inclosure clean at all times. No open drain shall be allowed to run through it.

Any person disobeying these rules shall, upon conviction, be fined not less than \$10 nor more than \$20 for each day during which shipments shall be made after the necessary order has been given. The live stock sanitary board, at the request of the owner, is required to furnish him with a certificate of health if the rules have been complied with and no disease is present in the herd. These certificates may be revoked at the discretion of the board.

SCHOOL INSPECTIONS.

It is hardly necessary to enter into a discussion of the value of school inspection, for it is admitted by all, and in the cities of any moment such inspections are usually carried on in a more or less efficient manner. The rural schools, however, are sadly neglected in this respect. With an all-time health officer for each county or district, it should be one of his duties to inspect from time to time the rural schools and the school children within his jurisdiction and report his findings to the State department of health. It should be one of the duties of the county authorities also to take the necessary steps to correct insanitary conditions and to furnish any medical aid necessary to indigent school children. Proper blank forms should be devised for reporting all necessary data in a uniform way, and regulations to govern the inspections should be promulgated. Complete reports of inspections made in cities should also be transmitted to the State department of health for statistical purposes.

Field Forces, Active and Potential.

It will be understood from what has been previously said that the State department of health, while proficient in so far as its central organization is concerned, is greatly lacking in the necessary machinery in the field for making investigations and enforcing necessary measures for improvement of insanitary conditions.

FIELD INSPECTORS.

In addition to the officers and employees at executive headquarters, the State department of health has only five sanitary inspectors and no medical inspectors, the duties of these latter devolving upon the secretary of the State board of health and the chiefs of the bureaus.

One of the inspectors is detailed with the bureau of communicable diseases to carry on epidemiologic studies, and the other four are detailed for food and drug inspection work under the State food and drug commissioner. One of these latter is especially concerned with inspections of meat and slaughterhouses.

At the request of a chief of a bureau one or more of these inspectors may be detailed as occasion requires, but most of their time is devoted to their regular work. The salaries of these inspectors are as follows:

One sanitary inspector, at \$1,000.....	\$1,000
Four sanitary inspectors, at \$900.....	3,600
Total.....	4,600

In addition to his salary, one of the inspectors receives 50 cents a day for his dinner during the time he is actually in the field.

The present field activities of the bureau of communicable diseases, especially, should be increased and additional ones assumed, but the present force is manifestly inadequate. This force should be enlarged and in order to increase the efficiency all of its members, except perhaps the inspectors employed by the bureau of sanitary engineering, should be under the general control of the chief of the bureau of communicable diseases, who would be responsible for their instruction, conduct, and discipline.

Furthermore, in order to be available to the entire department, and in every section of the State, this force should be a mobile one, and each inspector should be versed in the operations of the several bureaus. By this means he would be able to represent any one of the bureaus and could intelligently perform the several duties required of him. When a man from the time of receiving his appointment is detailed permanently to any one bureau, his value to the department as a whole is small, as there are few departments of health that are so well endowed that they can employ specialists in every line of work.

The field force should be employed for an indefinite period and not subject to discharge for political reasons, but only when found inefficient, insubordinate, or dishonest. Nothing is more conducive to inefficiency than frequent changes for political reasons.

Medical inspectors are also badly needed in the State department of health to travel through the State and inspect the work of the county health officers, not that there would be found much work to inspect, for the county health officer, generally speaking, does comparatively little, but with a view to determining the needs of the county and to getting the local officer to accomplish more.

COUNTY HEALTH AUTHORITIES.

In addition to the State department and its employees, the statutes provide for county boards of health and county health officers.

County boards of health.—The county board of health consists by statute of the county commissioners and meets semiannually in the months of May and October and as much oftener as may be deemed necessary.

Duties of the county board of health.—The duties of county boards of health, as stated in the statutes, are as follows:

1. To act in conjunction with the State board of health.
2. To report to the State board such facts in reference to the sanitary condition of their respective counties as they may deem important or necessary.
3. To adopt and enforce in full all rules and regulations concerning nuisances and cases of sickness.
4. To regulate all fees and charges in connection with their own regulations.
5. To establish the salaries of their respective county health officers on a maximum basis, as given later.
6. To investigate nuisances reported in writing by a qualified medical practitioner or any two or more persons affected thereby, and to serve the necessary written notice to abate, and to prosecute before a local magistrate any one refusing to obey such written notice.
7. To take cognizance of all unhealthy nuisances within the limits of its sanitary jurisdiction.

County health officers.—The county board of health appoints biennially a county health officer, who is required to be a well-educated physician and who, by virtue of his appointment, becomes secretary and executive officer of the board. He holds office for two years, but may be removed by the State board of health for cause upon charges made and considered at a regular meeting of the State board. This provision does not apply to Baltimore County.

Salary of county health officers.—Counties having a population of 15,000 or less are authorized to pay a salary to the health officer of not exceeding \$150 per annum, with an additional allowance of not more than \$50 per annum for each 5,000 population in excess of 15,000.

Duties of county health officers.—The duties of the county health officers, as provided by law, may be summarized as follows:

1. To act as secretary and executive officer of the county board of health.
2. To transmit to the secretary of the State board full name and post-office address.
3. To keep a record of the proceedings of the county board and of his own official acts.
4. To furnish a copy thereof annually to the secretary of the State board, with such other information in regard to the sanitary condition of his county as he may deem interesting or valuable for publication.
5. To enforce sections 30 and 31 of article 43, relative to disinfection of infected houses or articles.
6. To act as county registrar of vital statistics.
7. To take immediate steps to suppress dangerous communicable diseases within his county and promptly notify the secretary of the State board of health of the existence of such disease.

A number of county seats have been visited and the health officers interviewed. It can be very definitely stated that the county health officers generally are men of high class, of excellent standing in the community, and with large private practices. In fact, they are so busy with their practices that they usually have but little time to devote to their duties as public health officials. If these men were devoting as much time and energy to public health work as they are to private practice, they would no doubt be efficient health officers, but it would be impracticable to pay them sufficient salaries to induce them to give up their personal business and devote their entire time to the interests of public health. Under present conditions their official salaries are meager, and they do not even receive traveling expenses. Most of them have no assistants at all.

Except for the record of births and deaths and a file of the reports of communicable diseases, their records are very meager. The office is usually the physician's own private office. An exception to this is Baltimore County, which furnishes the county health officer an office in the courthouse at Towson, the county seat, and employs a clerk. The health officer does not live in Towson, however, and only comes to his official office once a week. In this county there are also 13 subdistricts, each with an assistant health officer. It should be said that Baltimore County partly surrounds Baltimore city and is more populous than any other county of the State. Notwithstanding its size and importance, it has not one incorporated town within its boundaries.

While the law gives the power to the State board to remove a county health officer for cause, practically this power can not be exercised. Even though the State board of health should decide upon the removal of a county health officer, the county commissioners would, after all, be judge and jury and may continue to employ him. If they should dismiss him, there is no law which would prevent

his reinstatement if they so desired. It would, in fact, have to be a very serious charge, amounting to a criminal offense, before the commissioners would be made to dismiss a county health officer at the instigation of the State board of health, unless they happened to be entirely in accord with that board.

With the exception of the cities of Baltimore and Cumberland, there is little or no real municipal health organization, although in some cities and towns there are health officers and a sanitary code which is utilized to advantage when the health officer is sufficiently energetic and receives the proper support from the city authorities. In some instances the county health officer is also the local health officer for the county seat.

Counties spend varying amounts during the year for health work—from a few hundred dollars to a thousand or more, these amounts covering the expenses of salary to health officer, vital statistics, disinfection, and vaccination.

RELATION OF STATE AND LOCAL HEALTH AGENCIES.

Probably the most important unit of a State health organization is its field force, including the medical and sanitary inspectors, visiting nurses, and the county and local health officers and employees.

On these agencies dependence must be placed for the suppression of epidemics; the inspection of factories, dairies, etc.; the collection of samples of water, food, and drugs for analysis; vaccination; investigations of nuisances, and the performance of many other duties. Without a field force little can be accomplished outside of the office, and that little devolves on the heads of bureaus, whose time is already so taken up with important office duties that much of the field work must be left undone. This means too often that the results had are mainly on paper.

To expect a health department to operate successfully without an adequate field force is as absurd and futile as to expect a police department to keep law and order without its patrolmen or to expect the chief of the fire department to successfully combat fires occurring in his district without firemen.

To coordinate and unify health work all the agencies performing it should be capable of wise supervision and control. And while our form of government predicates high authority in local administration it is necessary in the interest of the public health that the several units should be closely bound together under the supervision and control of a single head, the State department of health. Communicable diseases do not recognize county boundaries, and in the last analysis county and municipal health agencies are only a part of the State health organization.

Under present conditions, however, the county health agencies are generally inefficient. In consequence, what might be an invaluable field force is lost to the State and is of very little utility locally. This inefficiency is due largely to the fact that county health officers are appointed by the county commissioners and are subordinate to them. Furthermore, the salaries paid are so inadequate as to preclude the possibility of the health officer devoting a reasonable time to his duties.

Even though he may be public-spirited enough to work for little pay, the health officer's views can be dominated by the commissioners, who not infrequently know little about public-health matters. Moreover, men who are depending upon the votes of a circumscribed community for their election, or more especially their reelection, to a high local position, are loath to enact or support ordinances which will offend their constituents and thereby lose them votes. Unfortunately, laws or ordinances enacted for the purpose of preserving the public health do not always please the public, partly because of ignorance and partly because such laws or ordinances sooner or later touch the pocketbooks of a majority of the community.

Disease creeps upon a community so insidiously, attacking a person here and there before it becomes alarming, that the average lay mind does not realize there is any danger until the danger is acute.

Because of ignorance, the fear of offending their constituents, and a general disregard for the life and health of a community, local authorities are not inclined to pass adequate ordinances, and are not inclined to enforce them even when enacted, and any assistance they may render the health officer is too often but half-hearted, and only given when public opinion is aroused in his favor.

It is made clear by observation and study that the State department of health should be provided with an adequate field force. This could be accomplished by providing efficient district or county health units under its supervision and control. In each of these units there should be a capable physician, skilled in sanitary science. A man other than a doctor of public health, though skilled in sanitary science, would not fully answer the purpose.

A distinction must be made between the doctor of public health, the sanitary engineer, and the sanitarian. The latter has a knowledge of sanitary science, but is without a knowledge of disease, and has not all the qualifications of a sanitary engineer. Sanitary engineers are concerned with engineering problems of more or less magnitude, which when worked out produce conditions unfavorable to the existence of disease. Most of their success has been with water-borne diseases, like typhoid fever, where large engineering problems are frequently involved.

The doctor of public health, on the other hand, has not only an intimate knowledge of the manifestations of disease, but he has also a knowledge of sanitary science. He has not as great an engineering knowledge as the sanitary engineer, but has nevertheless quite enough to enable him to state in the case of water-borne diseases, for instance, that certain things must be done and, in a general way, how they can be done. For engineering details he can depend on the sanitary engineer.

There are many communicable diseases which are of the greatest importance from the standpoint of public health, and in which an early and accurate diagnosis is necessary, and where quick methods must be instituted to combat them. Among such diseases may be mentioned scarlet fever, diphtheria, smallpox, measles, bubonic plague, and typhus fever. The sanitary engineer or sanitarian who was not also a physician could not be expected to differentiate between varioloid and varicella, nor could he recognize a case of plague in man or animal by its symptoms or post-mortem findings. A doctor of public health is called upon as an expert in the diagnosis of these conditions.

In other words, in fighting disease the sanitary engineer must work hand in hand with a doctor of public health, and the doctor of public health only needs the advice of a sanitary engineer in certain well-defined conditions.

Yearly expenses of the boards of health of certain counties of Maryland.

County.	Salary of health officer.	Salary of others employed by board of health.	Office ex-penses.	Traveling expenses.	Disinfection.	Quarantine.	Vaccination.	Abatement of nuisances.	Vital statistics.	Remarks.	Total.
Anne Arundel.....	\$400.00	\$600.00	None.	None.	\$100.00	None.	\$800.00	None.	\$1,045.70	Additional expenses: Antitoxin..... \$280.18 Care of patients in hospital..... 2,492.00 Other expenses..... 2,341.26 5,113.44	\$2,945.70
Baltimore.....	1,000.00	3,875.00	\$118.25	None.	1,064.53	None.	183.77	\$232.96	1,765.84		13,353.79
Chesvert.....	100.00	None.	None.	None.	50.00	None.	150.00	None.	239.37		539.37
Caroline.....	150.00	None.	None.	None.	75.00	None.	None.	None.	497.10		652.10
Carroll.....	150.00	500.00	None.	None.	45.98	None.	146.30	None.	876.08		1,678.06
Charles.....	100.00	None.	None.	33.00	35.00	\$40.00	None.	None.	506.58		1,778.59
Dorchester.....	250.00	None.	None.	None.	125.00	None.	None.	None.	738.35		1,113.35
Harford.....	200.00	None.	None.	None.	35.00	None.	None.	None.	353.39		1,743.39
Howard.....	200.00	500.00	None.	None.	25.00	None.	None.	None.	353.89		1,778.89
Kent.....	150.00	None.	12.87	None.	114.17	None.	189.02	None.	389.55	\$5 allowed for each disinfection.	674.42
Queen Anne's.....	150.00	None.	None.	None.	(7)	None.	140.00	None.	389.55	County health officer is also health officer of Hagerstown.	674.42
Washington.....	1,025.00	326.00	1,120.04	None.	287.00	124.65	654.30	None.	1,147.48		4,684.47
Wicomico.....	150.00	None.	None.	None.	63.45	None.	21.50	None.	453.44		688.39
Total.....	4,165.00	5,951.00	1,261.16	40.00	2,023.79	164.65	2,185.09	235.46	8,599.05		29,738.64

These figures are taken from special reports submitted by the county health officers. Figures for the other counties are not given, because the county health officers of these counties did not answer the questionnaire sent to them by the secretary of the State board—a good example of the lax methods in the county and lack of control of State over county health officers.

Bureau of Vital Statistics.

The duties of a bureau of vital statistics had been performed under the authority of certain sections of article 43 of the Code of General Laws of Maryland of 1904, but it was found that to secure better results a more modern law was badly needed. Accordingly in 1910 a law was enacted adding, together with other sections, section 21a, authorizing the formation of a bureau of vital statistics; section 21f, defining its duties; and section 21g, authorizing the appointment of a chief and assistant chief. This was followed in 1912 by the passage of a law based on the model law proposed by the Bureau of the Census of the United States Government and other bodies, which places the matter on a firm basis. This law not only incorporates what was in the old law, but amends it, making it possible to organize so that complete returns may be secured.

The bureau of vital statistics was therefore organized in 1910. Its personnel and the respective salaries at the present time are as follows:

Chief of bureau.....	\$2,400
Three clerks, at \$480 each	1,440
Two clerks, at \$300 each.....	600
One stenographer.....	660
Total.....	5,100

Duties of the bureau.—The bureau of vital statistics is required by law—

(1) To supervise the registration of births and deaths in the State; (2) to receive, file, and compile all such records; and (3) to tabulate and publish the same in such form as shall make them most valuable in the public service. It is also required to perform such other duties and exercise such other functions as the State board of health or the secretary thereof may designate. (Sec. 21f, art. 43.)

REGISTRATION OF BIRTHS AND DEATHS.

Requirements of the law.—In conformity with existing law, the secretary of the State board is State registrar of vital statistics; the chief of the bureau of vital statistics is assistant State registrar of vital statistics; the county health officers are ex officio county registrars of vital statistics; the local health officers in towns and cities are ex officio local registrars of vital statistics.

The county is divided into registration areas, which are composed of one or more election districts. In each registration district the county registrar, with the advice and consent of the local board of health, appoints a local registrar, or the county registrar may also act as local registrar.

For the convenience of the physicians and undertakers the local registrar appoints a deputy local registrar and as many more deputy local registrars as the State registrar may consider necessary. These officials are located in the towns available to the largest number of people.

In instances of neglect or refusal to properly perform their duties, county, local, or deputy local registrars are subject to removal by the State registrar, with the advice and consent of the State board of health, and vacancies so created are filled by the State registrar.

All physicians, midwives, and undertakers must register their names, addresses, and occupations with the local registrar of the district in which they reside.

A death certificate is required to be made out for every death. It is then presented to the nearest registrar and is the authority for issuing a burial or other permit.

The deputy local registrar transmits the death certificate to the local registrar at once. The local registrar transmits the original death certificates for the month to the State registrar and a transcription of the same to the county registrar on or before the 5th day of the month succeeding.

The county registrar transmits to the State registrar all transcripts received by him during the month on or before the 15th of the next succeeding month. In case of unusual mortality the State registrar can require that certificates shall be sent in daily.

Death certificates are required to be signed by the last attending physician. In case the body is viewed by a coronor, or an inquest is held, he signs the certificate.

In case of death without medical attendance, or in case of sudden or violent death in which the coroner does not deem it necessary to hold an inquest, the certificate of death is signed by the health officer, or in his absence by the local or deputy local registrar.

The official first receiving the original death certificate and issuing a burial permit is entitled to a fee of 25 cents. For each transcript the officer is entitled to a fee of 10 cents. The county registrar is entitled to a fee of 25 cents for each record of death entered in the county record (all deaths registered in the county).

The fee for belated or incomplete certificates is one-half that allowed for proper and correct certificates.

For a certified copy of a death certificate, there is charged by the county or State registrar 50 cents, plus 50 cents an hour if the time consumed is over one-half hour. This fee is paid by the persons to whom the copy is furnished. All other fees are paid by the county.

No interment, cremation, or other disposal of a body is permitted without a burial or transit permit, and no burial permit is issued without a death certificate.

In case of death by infectious disease, interment is to be made according to the rules of the State department of health. These rules are in conformity with those adopted by the conference of State and provincial health authorities of North America.

No disinterment is allowed during the months of July and August. No disinterment of a body dead of an infectious or contagious disease is allowed except by permission and under the direction of the local board of health. No disinterment can be made without a permit from the registrar. To get such a permit a certificate of death must be presented. A disinterment permit consists of a burial permit with the word "disinterment" written across its face in red ink.

Transportation of dead bodies can only be made under the rules and regulations of the State board of health. All such bodies are required to be accompanied by a transit permit, a copy of the death certificate, and a burial permit.

Births are reported in the same way as deaths. The same fees are allowed and the same penalties provided, but a different form of certificate is used. Physicians, midwives, or others must report births within four days next succeeding the birth.

A stillbirth is reported by two certificates, one a certificate of birth, giving the age as "0," and in place of the name the word "stillbirth," and a certificate of death, giving the cause of death as "stillbirth." Plural births require a separate certificate for each child.

Penalties are provided for refusing to make out certificates of births and deaths; for false certificates; for undertakers who dispose of bodies without burial or removal permits; for refusal of county, local, or deputy registrars to enforce the provisions of the registration act; for altering certificates without authority; for furnishing false information; for imparting information to unauthorized persons; and for failure to register.

From the city of Baltimore, certificates of births and deaths are not required to be sent to the State registrar, but only such transcripts, tables, figures, and compilations as he may deem necessary. (Secs. 6 to 19b, art. 43, Act of 1912, chap. 696.)

In addition to the above, chapter 124 of the Acts of 1906 adds section 18a to article 43 of the Public General Laws of Maryland and provides that where any local registrar is not making full and complete returns, the State department of health may take full charge of the registration office for three months after giving the local board of health 30 days' notice. If, then, the registration returns show an increase of 10 per cent or more over the registration returns of the corresponding three months of the year next preceding, the expenses shall be paid by the local board of health. If less than 10 per cent increase, the State department of health pays all expenses.

Collection and disposition of reports.—The entire State has been divided into registration districts composed of one or more election districts, depending upon the population. The county boundaries have been preserved in forming these districts. There are 23 counties, each with a county registrar, 240 registration districts, each with a local registrar, or 240 local registrars in all; and, in addition, 210 deputy local registrars. The registration districts are numbered from 1 to 355, numbers being purposely omitted in each county to permit of further subdivision where increase of population or other reason would make it desirable. The city of Baltimore forms a separate district, the commissioner of health acting as local registrar, but certificates received by him are not sent to the State registrar.

The death certificate, after receiving the proper signature, is given to the undertaker. The latter takes it to the nearest registrar, who examines it to see that all the information required has been given, and then issues a burial permit, and a transit permit if required. The burial permit is valid in any part of the State. The burial permit is taken to the sexton of a cemetery or other person in charge of an authorized place where a body is to be disposed of. He enters the necessary data in a book furnished for the purpose and places the date of interment over his signature on the back of the certificate, which is then returned within 10 days to the local registrar of his district.

The deputy local registrar keeps a duplicate of the burial permit but does not keep a record of the death certificate, which is forwarded to the local registrar immediately, who in turn makes a transcript of it. The original is sent to the State registrar and the transcript is forwarded to the county registrar on or before the 5th day of the following month, who enters the full information in a book which becomes part of the county records. These transcripts are then sent to the State registrar on or before the 15th day of the following month. As has already been mentioned, death and birth certificates originating in Baltimore city are filed in the health department of the city, and neither original nor transcripts are sent to the State registrar, a summary or other statement being submitted monthly and at the end of the year.

Upon the receipt in the bureau of vital statistics of the original death and birth certificates for the month from the local registrars, the date of their receipt is entered in a book and stamped on the certificate. A separate record on a blackboard is kept of the receipt of transcripts from county registrars.

When the local registrar's certificates are not received in the State department of health by the 8th day of the following month they are classed as belated certificates. When the county registrar's certificates are not received by the 18th day of the following month they are classed as belated certificates. When received they are filed in a

temporary file according to counties and months. They are then carefully inspected, and if there is any missing information a letter is addressed to the doctor directing him to supply it.

An original certificate once received, never leaves the office. If, for instance, the signature of the physician is omitted from a death certificate, a copy of the certificate is sent for his signature, and this, when returned, filed as the original. Upon receipt of missing information, it is inserted on the original certificate in red ink.

The necessary information having been compiled for statistical purposes, the certificate is then placed in a permanent file arranged according to years and counties, with names in alphabetical order.

The transcripts of certificates, when received from the county registrars, are compared with the originals and then filed and kept for one year, after which they are destroyed, being of no further value.

As the United States Census Bureau is in the best position to reach the most people, Maryland, which is included within the registration area for mortality statistics of the Census Bureau, now submits, through its State department of health, transcripts of its certificates to that bureau, so that mortality statistics for the States as a whole may be published.

The transit permit is similar to the form used in other States and is made up of four parts, in duplicate, as follows:

Original:

1. A certificate of the local registrar.
2. A permit of the local board of health. (These are detached and delivered to the person in charge of the corpse.)
3. A certificate of the undertaker.
4. A space for information to be given to the station agent over his signature. (A paster to be placed on the coffin.)

Duplicate:

- 1.
2. } Same as above, to be sent to the general baggage agent by the local agent, who
3. } forwards it to the State board of health.
4. }

On the back of the duplicates are the rules for the transportation of dead bodies and a letter of explanation to railroad agents, station and train baggagemen. This duplicate when received by the State department of health is acknowledged and filed away for future reference.

A standard form of death certificate, so that registrars throughout the country will report all the necessary information in the same way, has now been adopted by all those States and cities within the registration area for mortality statistics, including Maryland.

A standard form of birth certificate is greatly needed. The form used in Maryland is deficient in certain particulars, as, for instance, whether the birth is legitimate or illegitimate, the number of children

living over two years of age, the name of physician or midwife in attendance, and the date on which the certificate is made out. It is advisable to have it in the same form as a death certificate, with a margin for binding.

Dead bodies from States other than Maryland are accompanied either by a transit permit from that State, or not infrequently merely by a letter of identification from the physician in attendance, which, while not an official paper, has to be accepted as such under the circumstances.

It appears that the vital statistics law states in one place (sec. 8, art. 43) that—

No sexton or person in charge of any premises in which interments are made shall inter or permit the interment or other disposition of any body unless it is accompanied by a burial, removal, or transit permit, etc.

This, then, gives authority to inter a body with either a burial permit or a transit permit. In another place it provides that all transit permits shall be accompanied by a burial permit. (Sec. 11, art. 43.)

When, however, bodies come from other States, they are not accompanied by a burial permit, and the bodies are interred under the authority of section 8, article 43, the local registrar frequently not knowing that an interment has taken place until he receives the transit permit from the sexton, and not then if the sexton forgets to forward the permit. There is therefore a discrepancy in the law which should be changed so that a burial permit would be required before any body from another State could be interred. This is, however, a minor detail which, with a few other small discrepancies, should be readily changed during the coming session of the legislature.

Record of fees.—At the end of each month county registrars are required to send in a statement as to the total number of births and deaths collected and entered in the county records. Local registrars must transmit a statement of the total number of originals collected by them, and the total number of transcripts sent to the county registrars. Deputy local registrars must submit a statement of the total number of certificates collected by them. The statements are compared in the State department of health with the number of certificates and transcripts actually received, and a voucher is made out for each registrar quarterly, showing the exact amount that is due him. This is presented to the county commissioners for payment. A press copy is made of this voucher in the State department of health.

The State and county registrars may issue certified copies of birth and death certificates upon application and payment of the proper fee.

The certificate of birth or death may cost the county 60 cents, i. e., 25 cents for the original, 10 cents for the transcript, and 25 cents for

entering it in the county records. The average cost of a certificate, taking into consideration that a certain number of them are faulty or belated, is about 51 cents.

Information as to whether a birth or death has or has not been reported is frequently determined by comparing the certificates received with the notices of births and deaths published in the numerous newspapers throughout the State. When such a notice is published and no certificate is received, a letter is addressed to the county health officer requesting him to look up the facts in the case and report. Sufficient evidence is frequently obtained to prosecute the offending person.

Compilation and tabulation.—While compilation and tabulation of data are carefully and thoroughly done, there always exists that chance for error where many figures are being handled—a thing not infrequently difficult to detect, as one error may correct another. Hand compilation is laborious and time-consuming, and much time and labor can be saved and the chance for errors decreased to a minimum by the use of the tabulating machine. These machines are not in the market for sale but may be rented at a cost which would make it worth while to install them.

THE MIDWIFERY ACT.

In addition to the duties already mentioned, the bureau of vital statistics of the State department of health is charged with the enforcement of the midwifery law.

Requirements of the law.—All midwives practicing within the State must register their names and addresses with the local registrar of vital statistics for the city, town, or county in which they reside. Such registration, however, does not entitle them to practice without a license and certificate.

All midwives practicing prior to July 1, 1910, may be given a license and certificate without examination. All midwives practicing subsequent to July 1, 1910, must pass an examination before they are entitled to a license and certificate.

Examinations are held in May and November in the city of Baltimore before the State department of health and in the different county seats before the local health officer of the city, town, or county.

Such examinations must be advertised once a week for four weeks previous to the date for examination.

To take an examination an applicant must pay a fee of \$5, which entitles her in case of failure to a reexamination within 12 months.

Applicants must know how to read and write and make out a proper birth certificate, and must present a certificate showing their experience and that they are of good moral character.

The registration is made by the different registrars. The license is issued by the clerk of the circuit court of Baltimore city, or the clerk of the circuit court of any county. The certificate is issued by the State board of health.

The law provides that midwives in their practice shall not make any internal examinations, as, for instance, a vaginal examination, nor shall they perform any kind of surgical operations, such as the use of forceps.

It also requires that if the eyes of any child within two weeks after birth become inflamed or swollen they shall use no application themselves, but shall immediately notify a physician or the health officer. A penalty is provided for failure to give notification or for any violation of any provision of the act. (Secs. 55a to 55p, art. 43.)

Administration of the law.—Any midwife desirous of practicing and who has practiced prior to July 1, 1910, requests the local registrar of vital statistics to present her name to the county health officer. The county health officer inquires into her skill as a midwife and her character, and submits in proper form a certificate that she has practiced prior to July 1, 1910, and is qualified to be licensed and registered. Upon receipt of this the State department of health issues to her a certificate of qualification, which she presents to the clerk of the circuit court, who in turn gives her a license. This license is presented to the county health officer, who registers her name, address, color, nationality, date of license and where issued, and qualifications.

A transcript of this registration is submitted to the State department of health. This department then forwards to the midwife a certificate permitting her to practice. If she has not practiced prior to July 1, 1910, a similar procedure is used, but before receiving a license and certificate she must undergo an examination, and a different form of certificate is then given, stating that she has successfully undergone the examination and is entitled to practice.

This law seems unnecessarily cumbersome. It will be noticed that a midwife wishing to carry on her calling must first present her name to the county registrar and ask him to request the State department of health to give her a certificate to practice; second, the county registrar, after an investigation as to her ability and character, reports to the State department of health; third, this department then sends her a paper which entitles her to be licensed by the clerk of the court. This does not permit her to practice, however, for she must then (fourth) take her license to the county registrar and be registered. Neither is this her authority to practice, for a transcript of her registration is then sent to the State department of health, which then (fifth) either after an examination or otherwise, issues to her a certificate to practice midwifery.

It is the experience all over the world that dealing with the question of midwives is difficult, mainly on account of their ignorance and lack of intelligence. Many of them not understanding the requirements of the law, avoid complying with it for fear they will not be able to stand the tests and will be put out of business, but they continue to practice and evade the penalty on the plea that they were called in as a friend of the family and charged no fee for their services.

It is desirable to have a law which is devoid of complicated procedures. In the present instance it would seem entirely unnecessary for the midwife to be licensed by the clerk of the court of the county in which she wishes to practice before receiving her certificate, inasmuch as the determination of her professional ability and her character rests entirely with the State department of health, and her right to practice is dependent upon these things. After she has been granted the privilege to practice within the State (not any particular county), it is then within the rights of the county, if it so wishes to require that if she desires to practice in that county she must be licensed, and even to charge a fee for such license. This, however, is a matter that should not concern the State department of health and should have nothing to do with the granting of the right to practice, which is based upon professional knowledge and good character; however, the law is accomplishing results perhaps as good as can be expected, and no law on the subject can be made with the expectation that perfect results will follow, but only that conditions will be improved as much as possible under the circumstances.

After a study of the work and personnel of the bureau of vital statistics, one comes to the conclusion that the personnel is efficient, and that the results obtained are accurate and as complete as can be expected until physicians and others appreciate the value of the registration of births and deaths.

Maryland is now in the registration area for mortality statistics, which according to the Twelfth Census of the United States, Volume III, Part I, Paragraph XXXVIII, means those areas in which the registered deaths constitute 90 or more per cent of the total deaths.

The scope of the bureau is too limited, however, and should be broadened to include the compilation and tabulation of morbidity reports, as well as reports of marriages and divorces.

There is perhaps a lack of energy among registrars in the county, but this would be overcome by a reorganization of the county health units, placing the county health officer directly under the control of the State department of health, and by the appointment of an inspector, one of whose duties it would be to travel through the State and supervise the work of the local registrars.

Table of information relating to birth and death registration in counties of Maryland, year ended June 30, 1913.

County.	Area.	Population estimated for the year 1912.	Number of registration districts.	Number of registered from—	Number of registrations.	Number of death certificates.	Number of birth certificates.	Amount expended in birth and death certificates.	Number of targets and physicians.	Number living in State but not in Maryland.	Number of undertakers.	Number of certificates without sextons.	Number of registered midwives.
Allegany.....	440.5	64,155	14	1-14	29	922	1,640	\$1,334.39	80	7	14	12	40
Anne Arundel.....	430.4	39,540	17	20-26	37	789	1,949	1,943.70	55	—	21	24	60
Baltimore.....	946.8	123,668	15	30-44	32	1,945	2,249	1,763.94	150	3	22	14	49
Calvert.....	216.8	10,345	3	50-52	15	101	239	238.37	12	—	9	—	41
Caroline.....	317.4	13,810	8	70-82	15	306	422	427.98	20	—	14	4	37
Carroll.....	373.3	23,749	17	90-96	29	366	463	425.98	53	—	17	34	3
Cecil.....	374.0	23,178	17	90-96	29	366	463	425.98	53	—	17	34	3
Charles.....	462.0	16,171	6	100-108	14	310	456	506.59	24	2	15	38	9
Crown Prince.....	573.0	26,871	11	110-126	19	547	750	738.36	27	—	15	13	63
Dorchester.....	630.0	52,823	25	130-154	48	877	1,116	1,081.84	70	—	29	4	67
Frederick.....	631.0	52,823	25	130-154	48	877	1,116	1,081.84	70	—	29	4	16
Garrett.....	431.9	27,563	17	160-172	23	202	514	449.31	14	12	15	12	4
Harford.....	436.8	27,905	17	160-172	23	202	514	449.31	14	12	15	12	4
Howard.....	243.1	16,985	6	190-195	15	410	426	468.39	4	2	12	7	16
Kent.....	287.1	16,500	6	200-205	12	305	358	353.89	24	—	0	0	28
Montgomery.....	517.0	39,418	15	210-224	31	390	573	316.79	49	1	11	13	41
Prince Georges.....	473.6	37,998	19	220-248	34	550	933	791.63	42	2	20	10	30
Queen Annes.....	328.6	16,534	9	250-255	11	306	337	380.55	25	—	11	13	32
Somerset.....	328.6	23,953	9	260-268	20	400	600	590.08	25	1	11	13	32
St. Marys.....	267.1	19,607	5	280-287	17	183	344	255.23	17	—	8	5	38
Talbot.....	457.3	19,475	5	290-294	11	334	328	380.96	26	—	27	4	35
Washington.....	457.3	50,513	17	300-316	32	756	1,340	1,147.48	72	—	27	5	22
Worcester.....	491.5	27,607	9	330-338	15	378	444	453.44	25	—	11	5	16
Worcester.....	491.5	27,607	9	330-338	15	378	444	453.44	25	—	11	5	16
Total.....	9,861.0	748,415	240	—	473	11,492	16,100	14,558.37	939	34	324	216	738

The city of Baltimore is not included in the above table.

Bureau of Sanitary Engineering.

The bureau of sanitary engineering of the State Department of Health of Maryland was organized in 1912 under authority of section 21a of chapter 560 of the Acts of 1910. Section 21g authorizes the employment of a chief and assistant chief. At present its authorized personnel, with their respective salaries, are as follows:

Chief of bureau.....	\$2,400
Assistant chief.....	1,700
Assistant engineer.....	1,400
Assistant engineer (resigned Oct. 1; position not yet filled).....	1,080
One stenographer.....	720
Do.....	720
	¹ 7,720

Its duties under section 21e of the above law are defined as follows:

1. To examine into all public and private systems of water supply and prepare proper maps and drawings of the same for permanent record.
2. To examine and patrol as far as possible the watersheds or catchment basins of all public water systems, and investigate and report upon all sources of pollution of public and private water supplies.
3. To investigate and report upon all private and public systems of sewage disposal.
4. To inquire into and investigate the water supply, sewage disposal, ventilation, heating and lighting of schools, asylums, jails, and other public institutions.
5. To inquire into and investigate offensive trades and nuisances, disposal of trade wastes, sewage, and other offensive matters, and devise means for their control.
6. To perform such other duties and exercise such other functions as the State board of health or secretary thereof shall designate.

Requirements of law.—In addition to the acts mentioned above and those laws previously mentioned relating to the abatement of nuisances, the following have a bearing on the work of the bureau of sanitary engineering. Section 429, article 27, of the Public General Laws of Maryland, makes it a misdemeanor, punishable by a fine of not more than \$200, to permit any filth, animal or vegetable, sewage, etc., to enter any stream, pond, or spring, etc., which furnishes a water supply to any city, town, village, community, or household, and after a reasonable notice, not exceeding 15 days, from the State or any local sanitary authority to discontinue the act whereby such water is fouled, a further sum of not more than \$50 for every day during which the offense is continued.

It is prohibited for any person to willfully and maliciously injure any ice upon any pond or stream of water so as to injuriously affect the quality of the same as an article for sale or use, or to willfully or maliciously cast or discharge upon any such ice any substance

¹ Ten draftsmen and assistants employed at various periods this fall on main drainage work near Washington, of whom three have worked for a few hours only. Rate of pay, 43 cents per hour. One assistant on same work since Oct. 1 at \$30 per month. Figures not included in total salaries as given above.

whatever which shall injure the same. For violation there is a fine of not less than \$10 nor more than \$20. (Sec. 55, art. 27.)

An act passed in 1894, chapter 511, requires the board of school commissioners in every city and county of the State to provide suitable and convenient toilet arrangements for each of the schools under their official jurisdiction; not less than two for each school or building when both sexes are in attendance, with separate means of access for each; and they shall be kept clean and comfortable. For failure on the part of the said public school commissioners to comply with the provisions of this act they are liable to be removed from office.

The bureau has been in operation only since May, 1912, but is already well started in the study of water supplies and the disposal of sewage within the State. Many maps have been prepared and many have been received from local authorities.

While the law gives the bureau numerous duties, it has failed to clothe it with any powers of control. The State as a whole is far behind the times so far as modern water-supply and sewage-disposal systems are concerned, as clearly indicated by the high typhoid rate.

The State government has no power to insist on a pure-water supply, or a proper disposal of sewage until the lack of same reaches the proportions of a nuisance, when it may step in and, by the cumbersome method already alluded to, take action, with no great prospect of success, and a very great probability of long delay.

Except in Baltimore County, where there is a local ordinance, there is no provision made whereby plans for a water supply or sewerage system for any community or household, shall be approved by the State department of health, so that at present any sort of an installation may be made regardless of its utility or cost, and thus the people may be compelled to pay for something from which they may not derive the expected amount of benefit.

The great value of such a law has only recently been shown in Baltimore County, which has an ordinance requiring that all plans must first be approved by the State department of health. In this instance, by taking a firm stand, the State prevented the county from purchasing for \$600,000 an \$80,000 sewerage system, entirely inadequate for its purpose, thus saving the citizens of the county a large sum of money.

In the State of Maryland there are a number of privately owned water systems supplying the smaller towns. These are especially hard to handle as the element of profits to the company must be considered, making it difficult to institute reforms.

There is a great need of a law giving the State control over the water-supply and sewerage systems, public and private, throughout

the State and making it compulsory to have all plans for all proposed construction approved by the State, and the power to require necessary alterations in already existing installations without waiting for a nuisance to arise and before the health of the community is jeopardized.

The present bureau is not concerned with plumbing, nor does it seem necessary that it should be, except in the case of public buildings. Plumbers are licensed as master plumbers by the State board of commissioners of practical plumbing, which has no connection with the State department of health.

The question of nuisances in connection with the bureau of engineering has already been considered.

All plans for proposed public buildings, or changes in the heating, lighting, ventilation, or disposal of sewage of existing buildings should be required to be submitted to the bureau of sanitary engineering for approval. This should include all public schoolhouses erected within the State.

Although the bureau is greatly handicapped in not having sufficient help in the field, some very important field work has nevertheless been carried on, probably the most important being a survey of the territory surrounding the District of Columbia. This is not yet finished and is being done for the purpose of determining the best method for the disposal of sewage from that territory.

The bureau of sanitary engineering should have representative engineers in the field, under some designation such as district engineers and inspectors, just as the bureau of communicable diseases should be represented by county or district health officers. The district engineer and district health officer must cooperate, for it is only by cooperation that success will attend the operations of the department.

The present bureau, though small, is well organized and is unquestionably capable of doing much good for the health of the people of the State, provided it has adequate laws giving it adequate powers and a sufficient appropriation.

It must be remembered that the work of the bureau of sanitary engineering, so far as the advancement of public health is concerned, is probably equaled only by that of the bureau of communicable diseases, and for large operations that secure lasting and telling results is probably equaled by no other bureau.

Bureau of Bacteriology.

While a bacteriologist had been employed for about 12 years, a bureau of bacteriology was not authorized until 1910, when the act was passed reorganizing the State board into a State department of health and authorizing the creation of certain bureaus. The personnel

of the bureau and their respective salaries at the present time are as follows:

Chief of bureau ¹	\$1,800
Assistant chief.....	1,800
One laboratory assistant.....	500
Do.....	300
Do.....	240
Do.....	208
One stenographer.....	600
	<hr/> 5,448

Duties of the bureau.—The duties as defined by the above-mentioned act (sec. 21c, art. 43) are as follows:

1. To conduct inquiries into the nature, source, and vehicles of infectious diseases.
2. To establish and maintain, under the direction of the State board of health, a properly equipped laboratory.
3. To extend its services free to all local boards of health and to all practicing physicians of the State for such inquiries concerning infectious and contagious diseases as the said board may from time to time direct, and to the vaccine agent for testing vaccine virus.
4. To examine into and analyze public and private water supplies, milk, and other foods.
5. To perform such other duties and exercise such other functions as the State board of health or the secretary thereof shall designate.

In actual practice the bureau of bacteriology or the bacteriological laboratory of the State Board of Health of Maryland is concerned with all the duties ordinarily required of such a laboratory, namely, bacteriological investigation of water and foods, including milk, the examination of pathological materials, the manufacture of biologic products, and original research along the lines of public health.

This particular bureau is a very important part of a health department which could not be dispensed with and one worthy of description in greater detail than can be here given to it. To describe it properly it would be necessary to go into technical details, which is deemed unnecessary.

At present the bacteriological laboratory is used in common by the State and by the city of Baltimore, each paying its share of the expenses. This would seem to be an economical arrangement; although, given sufficient funds, it would seem reasonable to have the State laboratory do all the work for the city of Baltimore, just as it now performs certain functions for the State as a whole. Extra work performed for the city, however, outside of the ordinary routine, might be paid for by the city at a rate satisfactory to both parties.

Much of the work of the bureau is concerned with the diagnosis of the acute communicable diseases—typhoid fever, diphtheria, and rabies—and with the more chronic communicable disease, tubercu-

¹ The chief of the bureau receives also \$1,800 from the city of Baltimore, making his salary total \$3,600.

losis; and inasmuch as it is absolutely necessary to secure prompt reports of results, the findings are transmitted from the bureau of bacteriology direct to the physician who submitted the specimen for diagnosis. These examinations are made free of charge.

The culture stations which have been referred to in a previous chapter are supplied with mailing outfits by the bureau of bacteriology. One of these outfits is intended for use in the transmission of sputum for examination, and contains a sterilized wide-mouth bottle with glass stopper, partly filled in the laboratory with a disinfectant solution. When one of these bottles is received in the laboratory its contents are mixed with antiformin and ligroin, and the usual method is pursued for demonstrating tubercle bacilli. The bottle is immediately sterilized. Thus the entire process is carried out without removing the contents from the bottle, except to make the necessary smear.

Another outfit is intended for the transmission of swabbings for demonstrating the presence of diphtheria bacilli, and consists of a test tube, in which is inclosed a sterile swab. Loeffler's blood serum is inoculated from this swab after it reaches the laboratory. In the case of the city of Baltimore the mailing outfit contains a tube of Loeffler's blood serum in addition to the swab, and the physician inoculates the culture medium.

A third outfit contains a small aluminum box and a few glass cover slips. These are intended for the transmission of blood for the Widal reaction, or the making of blood smears of suspected malaria. The last mailing outfit supplied contains, in addition to the box and cover slip, a bile-culture tube to be inoculated either with blood from the patient or with feces or urine.

The container for all of these articles is of an approved type for mailing, and with each is transmitted the necessary information. When these outfits are sent out a record is made on a filing card, one card being used for each station; and when they are returned by a physician the station from which they were obtained is debited, the same card being used for the purpose. In this way a check can be kept on the supplies being issued from any particular station and new supplies sent as needed. When physicians reside some distance from a culture station they are supplied with mailing outfits direct from the laboratory. A separate file is kept of supplies sent to physicians.

The containers for the transmission of samples of water or milk for bacteriological examination consist of a galvanized-iron box with a cover and lock; within this box on two opposite sides is a series of compartments which hold the glass-stoppered bottles in which is put the material for examination, and a center compartment which is filled with ice. An inside cover holds the bottles in place. The

entire package is sterilized before it leaves the laboratory. The box is not supplied to culture stations, but is sent to any individual on request, and is returned by express with certain required information.

It seems to be quite satisfactory in the case of water, but not so in the case of milk. Where milk is being transmitted, additional ice should be placed in the special compartment from time to time to maintain the proper degree of temperature of the milk and to prevent multiplication of organisms and the consequent inaccurate result.

In making examinations by staining for bacteria, five smears from different cases of the same disease are made on the same slide. Slides are used several times, after thorough cleansing, but never twice when the same organisms are to be identified.

Stained slides are filed in the laboratory for at least two weeks, in case it should be necessary to refer to them the second time for a confirmation of diagnosis.

The laboratory is open at all times of the day and night to receive material for examination. The attendant who remains there at night has been trained to make the necessary inoculations of culture media from swabs. On Sundays and holidays a bacteriologist is on duty for a sufficient time to do the routine work.

For each examination a card of information is filed and the result of the examination noted, together with how these results are sent out, whether by mail, telegraph, or telephone, and the time sent. Regular printed forms are used for transmitting the results to physicians when sent by mail. Results are always obtained and transmitted promptly.

On account of the skepticism of some physicians and the dislike which some of their patients have for quarantine and disinfection, the laboratory is in the position of having its accuracy tested by what might be termed underhand methods. For instance, not long since it received from a practicing physician in the State of Maryland two swabs accompanied by the customary information and purporting to have come from the throats of diphtheria patients. After examination the diphtheria bacillus was found and the cases reported as positive. The doctor who submitted the swabs claimed that such findings were ridiculous, as he sent two swabs which he had never inoculated with any material, not even having taken them out of their original container. On investigation it was found that he had obtained in all four swabs from the culture station and that he took swabbings from the throats of two of his patients who clinically had diphtheria. Without going into detail, it may be said that the evidence was strong that in his attempt to deceive the bureau of bacteriology this man had gotten his four culture tubes mixed and

actually sent the two which he had inoculated from the throats of his patients, instead of the two which he supposed were blank.

It is true that the bureau of bacteriology, like other laboratories, may make mistakes, but it is well equipped, is in charge of a highly capable man, and unquestionably performs excellent work.

The only biologic product which is manufactured in the laboratory is typhoid vaccine, which is issued free of charge to the physicians of the State.

The advisability of establishing a few branch laboratories equipped for routine examinations should be carefully considered by the board of health. Such laboratories situated in the more thickly settled parts of the State distant from Baltimore would greatly facilitate and expedite the work of examination of specimens submitted by physicians and thus render them considerable aid. The bacteriologist could be appointed as assistant to the district health officer formerly mentioned and the cost of equipment would not be great.

Bureau of Chemistry.

The bureau of chemistry of the State department of health of Maryland was established under authority of chapter 560 of the acts of 1910 (sec. 21a, art. 43), although as early as 1887 a chemist had been employed. Section 21g authorizes the appointment of a chief and assistant chief. Its personnel and their respective salaries at the present time are as follows:

Chief of bureau.....	\$2,500
Assistant chief of bureau.....	2,500
One assistant chemist.....	1,000
Do.....	800
One laboratory assistant.....	420
One stenographer.....	600
	<hr/> 7,820

Duties of the bureau.—Section 21d defines the duties of the bureau as follows:

1. To conduct inquiries into the nature, source, and vehicles of infectious diseases, and into the nature and character of sewage, trade wastes, and into nuisances.
2. To examine and analyze free of cost, samples from public and private water supplies, milk, and such other foods, drinks, confectionery, drugs, spices, and condiments, as the board shall direct.
3. To establish and maintain, under the direction of the State board of health, a properly equipped laboratory.
4. To perform such other duties and exercise such other functions as the State board of health or the secretary thereof shall designate.

At present all correspondence relative to analyses of private water supplies is attended to by the bureau of chemistry. The samples come direct to the laboratory, addressed to the chief of the bureau. The chemist who makes the examination sends the results

to the chief chemist on a mimeographed form containing the details of examination. The results are then calculated by the chief of the bureau, and the necessary information transcribed to a card, which is then filed away as a record with the mimeographed form containing the details. The information is also transcribed to a special printed form, which is submitted to the person requesting the analysis. With this is also inclosed the results of bacteriological examination on a separate form and a leaflet on the subject of anti-typhoid vaccination. Every sample of water submitted for examination is required to be accompanied by certain information, and a blank form is furnished for that purpose. When this information does not accompany the sample a letter is addressed to the person submitting the sample requesting it. With this letter there is also inclosed a booklet concerning the collection of samples of water.

The bureau of chemistry is at present making many examinations of private water supplies in different parts of the State. While the department is, of course, established to assist the public, it at times happens that this examination involves the department in private lawsuits, where nothing can be gained in advancing the public health; a number of employees are sometimes subpoenaed as witnesses in these cases and thus valuable time lost to the department. Samples of water should be examined for private individuals only when they come through and at the request of the county health officer, and then only when in his opinion such an analysis is deemed necessary or desirable in the interest of the public health.

In the case of samples of food and drugs submitted for examination by the State food and drug commissioner, the chemist who makes the examination transmits a report in detail on a mimeographed form to the chief chemist, who in turn sends a statement of the results without the details to the State food and drug commissioner by letter. The mimeographed form with details, as in the case of water, is filed away for use in court if prosecution is instituted, or a hearing ordered.

A chemical laboratory of any health department is chiefly concerned in the examination of foods and drugs for the division of foods and drugs, and in the analysis of water, sewage, and trade wastes, in which it cooperates with the bureau of sanitary engineering. It at times may make analyses of other things, as, for instance, disinfectants for the bureau of communicable diseases, and may in its spare time perform original investigations involving chemical problems of interest from the standpoint of public health. Thus a chemical laboratory is really concerned in cooperating with or assisting other bureaus, and its direct responsibility in such matters ceases when it has obtained accurate results and transmitted them to the proper bureau. This interest may be revived, so to speak, when it becomes necessary to testify in court relative to any analysis made.

As the chemical laboratory's functions are to assist other bureaus in their work, there should be little necessity for outside correspondence, and the chemist's time should be spent in the laboratory rather than in the office.

The results of examinations, if they are given out, should be made known by the bureau requesting the analysis. For instance, results of water analysis should be transmitted to the chief of the bureau of sanitary engineering by properly filled-in forms; and letters giving judgment or advice in respect to waters tested should be sent out from the bureau of sanitary engineering, which is concerned in the control of water supplies. The same procedure should be followed with regard to foods and drugs, except that the results of analysis should be sent in proper form to the chief of the division of food and drugs.

As a matter of expediency, samples of water should be delivered direct to the laboratory, thus avoiding delay in their examination.

In order to check the work of the examining chemist, the chief chemist desires all data collected in connection with a water sample. As, for instance, the proximity of privies and pigpens or stables to the source of water supply, character of soil and direction of drainage, etc. While this information is essential in interpreting the results of the analysis, it should have no bearing on the analytical procedure, which is a clear-cut chemical problem, and the results should be the same whether such data are at hand or not; and there should be some better way, by personal supervision if necessary, to determine that the analyst is performing accurate work.

Many analyses in the laboratory are made with the ultimate object of bringing prosecution in case adulterations or contaminations are found. It would seem that the results of such an analysis stated in proper form over the signature of the chief of the bureau, the responsible head, would have more weight in court than pencil notes made by a subordinate at the time of examination, especially when it is remembered that the subordinate's figures are checked and the final calculations are made by the chief himself. This is not the case, however, and it is necessary to keep all pencil notes of the analysis step by step. These pencil notes are considered the original records, and therefore must be filed for future use. No case is brought up for prosecution until the findings are checked by a second analysis made by another chemist of the bureau.

A simple and satisfactory form for requesting examination and reporting the results is suggested as follows: On one side of the blank form should appear the request, on the other side a place for reporting results. The chemical laboratory should analyze such products as are received with a request for analysis signed by the chief of the bureau making the request; the results of analysis should be initialed by the chemist making the analysis, signed by the chief chemist, and

returned to the bureau making the request. Each one of these requests should be made in duplicate and given a laboratory number, the duplicate to be filed in the bureau of chemistry with the pencil notes of the analyst. No other record or any correspondence is necessary. It is more satisfactory to have one form for water analysis and another for all other analyses, and in the case of water the request should clearly state what kind of water (whether artesian well, dug well, spring, river, etc.) and the locality.

The laboratory is well equipped and capable of performing any analysis which is likely to be required.

It is supported, except for the salary of the chief chemist, from the funds of the division of food and drugs.

In some places a chemical laboratory is combined with the division of food and drugs, this combination requiring but one chief and one clerical force and being more economical. It would seem to be a good arrangement. In some States the analysis of sewage and water comes directly under the control of the sanitary engineer.

Division of Food and Drugs.

A food and drugs act (chap. 156 of the Public General Laws of Maryland) was passed in 1910, and accordingly, in order to carry out its provisions, a division of food and drugs was established in the State department of health. The personnel of this division and their respective salaries at the present time are as follows:

State food and drug commissioner.....	\$2,500
One stenographer.....	900
Four inspectors, at \$900.....	3,600
	<hr/> 7,000

Requirement of the laws.—The food and drugs act of Maryland is based on the Federal food and drugs act, with certain minor changes. It provides for a State food and drug commissioner at a salary of \$2,500 per annum, whose duty is exclusively the administration of the law under the direction and supervision of the State department of health. It provides that the examination of specimens of food and drugs shall be made in the laboratories of the State department of health and under the direction or supervision of the commissioner. It provides that in the case of adulteration or misbranding, parties shall be given a hearing, and, if deemed necessary, the State department of health shall certify to the State's attorney of the county or the city of Baltimore that the law has been violated.

The standards adopted for the enforcement of the law are those heretofore adopted by the United States Department of Agriculture, with the exception that ice cream shall contain not less than 4 per cent of butter fat and that fresh eggs and not exceeding 1 per cent

of gelatin, gum tragacanth or vegetable gum may be added without a statement of such fact.

There is also a requirement that disinfectants must be labeled with the carbolic-acid coefficient.

Drugs, with the exception of opium preparations, may be sold if below the standard of the United States Pharmacopœia provided they are properly labeled. The United States law contains this same substandard, permitting the sale of drugs under like conditions, but does not except opium preparations.

The act also contains a provision requiring the purity and proper labeling of spring, well, or mineral water sold, produced for sale, etc., which provision the United States law does not have.

The standards that have been published by the United States Department of Agriculture since the passage of the State food and drugs act can not be adopted without further legislation. Their adoption should be authorized by an amendment to the law. The State board should be given the power to make such standards as it may deem necessary, basing them on the standards proposed by the United States. The standard for ice cream as defined in the law is extremely low. In fact a frozen product containing but 4 per cent of butter fat is not ice cream, but more properly "ice milk." This standard should be materially raised.

The standards for milk are not contained in the food and drugs act, but are defined in section 232 of article 27, which states that milk shall contain not more than $87\frac{1}{2}$ per cent of water or fluids, and not less than $12\frac{1}{2}$ per cent of milk solids of which at least $3\frac{1}{2}$ per cent shall be butter fat.

Section 233 of article 27 defines adulterated, sophisticated, or unwholesome milk as follows: When it does not contain $12\frac{1}{2}$ per cent of the milk solids, of which $3\frac{1}{2}$ per cent shall be butter fats; when any preservative has been added; when ice or water has been added; when it has been taken from a sick or diseased animal; when it has been taken from an animal 10 days before or 10 days after parturition; when it has been taken from animals fed in whole or in part on garbage or any substance in a state of fermentation or putrefaction, or food that produces impure or diseased or unwholesome milk, or from cows stabled near a house where there is an infectious disease; or any milk from which a portion of the cream has been taken. Skimmed milk, however, may be sold when plainly and conspicuously marked "skimmed milk."

For the sale of such milk, section 234 provides a fine of not more than \$100 or imprisonment for not more than 60 days or both. This section, however, does not apply to Montgomery County, except when milk from that county is shipped to Baltimore city.

Section 235 of article 27 provides that no condensed or preserved milk shall be manufactured, sold, or exchanged unless it is manufactured from pure, clean, healthy, fresh and unadulterated and wholesome milk from which the cream has not been removed either in whole or in part. It shall have the same proportion of ingredients that are contained in crude milk, and all packages must be labeled with the name of the manufacturer. For violation of this section there is a fine of not less than \$25 nor more than \$100 or imprisonment for not less than 10 days nor more than 30 days, or both.

Section 236 provides that all milk cans must have the initials of the owner, dealer, or shipper stamped or marked on them, and that they shall not be used for any other purpose than for milk or cream, and provides a fine for violation of not more than \$50, one-half of the fine going to the informer and the other half to the board of school commissioners.

The authority to condemn and order the destruction of food products is contained in sections 128 and 129 of article 43. This authorizes the State board of health or its proper officer or inspector to inspect food products at all reasonable times, and if found unfit for human consumption to order the destruction thereof, and fines are provided for failure to obey any such order.

Chapter 69, 1902, adding section 55a to article 43 of the Public General Laws of Maryland prohibits the killing of any animal for human consumption that is sick or injured, and any female animal within 30 days after delivery. The burden of proof that such animal was not intended for human food is borne by the party charged. For violation, a fine is provided of not less than \$25 nor more than \$100.

Section 237 of article 27 relates to the selling, furnishing, or giving away of cocaine, salts of cocaine, morphine, and eucaine, except under certain conditions, and provides a fine for the first offense of not less than \$25 nor more than \$50. For the second and third offense the fine is increased.

Methods of operation.—Four inspectors are employed who purchase from time to time samples of food and drugs in different parts of the State and in the city of Baltimore. At the time of purchase a receipt is given to the dealer. These samples are brought to the State food and drug commissioner with the inspector's report, which is on a regular printed form. The samples are then turned over to the chief chemist, who receipts for them and causes them to be analyzed, and the samples are kept under lock and key for future use as evidence in court. The pencil notes of the analyst containing the details are checked and final calculations made by the chief chemist. The results are sent to the State food and drug commissioner by letter, the pencil notes are filed away for future use as

evidence in court, and the information contained in the letter of the chief chemist is used by the State food and drug commissioner to determine whether the product is adulterated or misbranded; if so, he addresses letters to the parties concerned with a statement of facts requesting them to appear for a hearing on a certain day. They are heard before a board composed of three members—the State food and drug commissioner, the secretary, and the general counsel of the board of health.

If, after hearing the evidence, a violation of the law is believed to have occurred, it is placed before the board of health, who then decide whether or not to bring the matter before the State's attorney for prosecution.

In the counties cases for trial are brought before the justice of the peace and prompt action is usually obtained, although, of course, the defendant may demand a jury trial, when it then must be taken before the circuit court. In the city of Baltimore all cases go before the criminal court, which means great delay, and in fact little is accomplished.

The commissioner of foods and drugs is rarely called upon to testify in court, but the presence of the inspector who collected the sample, of the chemist who made the analysis, and of the chief chemist who directed how the analysis should be made, is always required.

The law should be so amended that offenders against the food and drugs act in the city of Baltimore could be prosecuted before the local magistrate. This would simplify operation and secure more rapid and effective results.

The inspectors of the department detailed to this division are concerned principally in the collection and inspection of food and drug products and the condemnation of foods unfit for human consumption. At the time of taking the samples an inspection of the premises is also made and reported upon.

Status of commissioner.—Although the commissioner of foods and drugs is to all intents and purposes a chief of bureau coming under the direction of the State board of health, on account of the food and drugs act, which specifically appoints him State food and drug commissioner, his actual status in the department would seem to be somewhat above that of a bureau chief, inasmuch as he makes his report not through the secretary, as do the other chiefs, but direct to the board in person, and he is, therefore, the only subordinate of the board who is entitled to attend the meetings. It would seem that the chief of this division should in all respects be on the same status as other bureau chiefs.

Clerical Division.

The clerical division is not authorized by any specific law, but is necessary in order to properly carry on the work of the department. The personnel, with their respective salaries, are at present as follows:

Chief clerk.....	\$1,500
1 assistant clerk.....	540
Do.....	216
1 chief multigraph operator.....	600
1 assistant multigraph operator.....	300

¹ 3,156

This division has as its duties the care of records, finances, property, and a general supervision of the clerks and stenographers, and in some health departments is divided or subdivided into a record division, a financial division, and a property division, depending upon the magnitude of the work done.

While the clerical division of the Health Department of Maryland has in a general way all of the duties mentioned above, it is only concerned with records in so far as such records relate to the working of that division, the monthly reports of bureau chiefs, and the correspondence and reports relative to tuberculosis. These latter records are kept in the clerical division because, for the convenience of the public, the tuberculosis clerk has her office in the office of the chief clerk, it being the most easily accessible to visitors. All other bureaus keep their own reports and letter files.

The chief of the clerical division attends to the purchasing of supplies for the department except in the case of technical supplies required by the laboratories and bureau of engineering. He does not, however, assume the property responsibilities of a regularly designated and bonded property man. His responsibility ceases when he has turned the supplies over to the bureau chief for whom they were purchased, and he is not required to make any property returns.

He must keep a record of all moneys acquired or expended by the department, and account for the same by a monthly statement at the regular monthly meeting of the board of health. Like all of the bureau chiefs he makes a monthly report to the secretary. This report includes a statement of all letters sent out and received by all of the bureaus of the department, with other pertinent data and a compilation of the expenses of the department for the previous month.

He has general supervision of clerks and stenographers, in that he may temporarily assign certain work to any clerk, who for the time

¹ Two emergency clerks employed since Dec. 1, 1913, one at \$25 per month and one at \$8 per week, and one office boy at \$4 per week.

being has nothing to do in the particular bureau to which she is regularly detailed.

He also acts as stenographer during meetings of the board of health.

Clerks and stenographers are at present employed by the different bureau chiefs under whom they are going to serve. Under this system the department has been fortunate in securing a capable force, but it is nevertheless uncertain. The secretary has an idea relative to the employment of clerks which seems to be good. Many times there is certain clerical work on hand at the department which can not be done on account of a lack of employees. In order to finish this a certain number of clerks could be given temporary employment only, their ability determined while so employed, and the best given permanent employment as the occasion arises. It being understood that they are temporarily employed only they could be relieved at any time if they prove inefficient or when a certain piece of work is terminated. In this way the library could be properly catalogued, etc.

The system of keeping an account of expenditures and a record of property is very satisfactory.

For a record of expenses four books are kept; a petty cash book, a cash book and voucher record, a double-entry ledger, and a purchasing ledger. In addition to this a file is kept showing the cost of articles, segregated according to the nature of the article, and a file of requisitions for money from the petty cash account with an itemized statement of traveling expenses.

To account for property there are kept several files; one of requisitions for stationery and supplies, filed by months according to bureaus; one of orders shipped and one of shipping lists. There is also kept an index of catalogues giving the price of articles commonly used by the department. Articles kept in stock consist mainly of stationery and office supplies.

When an article is wanted by a bureau chief for the use of field men, as, for instance, blank forms for registrars, an order is made out, signed by a clerk, and transmitted to the chief clerk. This is filled by an employee of the division and an entry made on the order as to how shipped, date shipped, by whom filled, name of bureau to be credited with the supplies, and each article on the order is checked by the shipping clerk as packed. When supplies are not to be shipped but used in the department a requisition is made out, signed by a clerk, and approved by the chief of the bureau requesting the supplies. If the supplies are not in stock an order is written in duplicate on the dealer quoting the lowest price and promising the quickest delivery.

At the end of the month pay rolls are made out and signed. These are totaled and together with the expenses from the petty cash

account for the month entered on a voucher, made out in favor of the secretary of the State board, and transmitted with a summary of expenses for the month, certified to by the secretary, to the comptroller of the State of Maryland. He in turn returns a check drawn in favor of the secretary for the entire amount. This check is deposited in the bank and checked against in paying the monthly bills. Employees of the department are paid in cash from this amount. All checks are signed by the secretary.

The chief clerk has at his disposal a petty cash account of \$900, \$400 of which is to defray the petty expenses of the division of food and drugs, i. e., purchase of samples and traveling expenses of inspectors. Money for traveling expenses of inspectors or other employees of the department is advanced from the petty cash account, the employees keeping an itemized account of expenses and returning any balance to the chief clerk. The petty cash account is reimbursed at the end of each month in an amount equal to the amount expended. Correspondence of the division is filed alphabetically.

Expenses.

In the following table, showing the expenses for the period between December 31, 1912, and January 1, 1914, no attempt is made to give any balanced account. As the different appropriations become available at different times of the year, an arbitrary fiscal year must be assumed. But no matter which period of 12 consecutive months is taken there would always be some appropriations for the previous year still unused and new appropriations for other purposes coming due. This tabulation for instance, shows that \$3,829.21 was spent for the treatment of hydrophobia, which is \$1,329.21 more than the annual appropriation. This is because the yearly appropriation for hydrophobia falls due at a period somewhere between the beginning and the end of the arbitrary fiscal year and so within that year parts of two appropriations were used. This tabulation also shows that the department has expended a total of \$76,346.41, which is \$6,346.41 in excess of the annual appropriation of \$70,000. This, however, does not really mean a deficit but is explained by certain of the yearly appropriations not yet having lapsed, and therefore still available for the payment of bills. It means, however, that to remain within that appropriation some economy is necessary for the remaining months during which that particular appropriation is available. The average for any 12-months period should be \$70,000.

At the beginning of the assumed fiscal year, January 1, 1913, there was an unexpended balance of approximately \$30,000 which represented the amounts still available from appropriations which had not yet lapsed and which were needed to defray expenses until the next appropriation for the same purpose fell due. At the end of this fiscal year, December 31, 1913, there were approximately the same amounts representing the same thing. It does not mean therefore that there is actually an unexpended balance which will revert to the treasury. In fact, it is not an unexpended balance, strictly speaking, as it is the amount needed to defray the expenses of the department until the next appropriations become available.

Statement of expenditures, State department of health, fiscal year 1913.

	Board of health and executive office.	Bureau of communicable diseases.	Bureau of vital statistics.	Bureau of sanitary engineering.	Bureau of bacteriology.	Bureau of chemistry.	Division of food and drugs.	Clerical division.	Total.
Salaries.....	\$8,950.98	\$4,811.46	\$4,646.19	\$7,280.71	\$5,061.93	\$7,588.36	\$5,275.00	\$2,835.56	\$46,459.19
Traveling expenses.....	220.40	272.86	228.37	768.95	16.50	5.00	1,685.39	271.32	3,468.89
Books and subscriptions.....	143.55	7.00	.....	12.84	.....	7.50	17.49	.....	188.38
Telegrams and telephone.....	20.94	169.54	41.62	85	137.65	.....	170.70	188.13	779.33
Per diem and traveling expenses, board of health.....	275.30	.....	.....	50.48	.....	.....	.....	.....	275.30
Blue prints.....	.....	.....	.....	11.40	.....	.....	.....	.....	11.40
Miscellaneous.....	9.40	114.94	114.94	11.60	.....	3.42	3.65	389.09	532.10
Expressage.....	163.61	16.09	16.09	28.70	.....	25.32	.....	27.28	281.10
Filing cabinets and supplies.....	50.25	345.01	6.60	6.60	.....	95.01	66.15	27.28	618.14
Furniture.....	138.25	81.97	81.97	134.37	.....	53.64	15.25	214.82	638.30
Maps.....	.....	.....	.....	23.00	.....	.....	.....	.....	23.00
Office supplies.....	160.30	66.82	66.82	62.96	3.13	42.01	7.10	808.10	1,150.42
Postage.....	293.55	315.66	315.66	6.85	103.59	.....	3.70	1,148.52	1,871.77
Printing.....	426.60	920.95	920.95	101.50	146.21	41.87	187.07	667.20	2,491.40
Technical supplies.....	.....	.....	.....	283.59	.....	.....	.....	.....	283.59
Typewriters and supplies.....	184.09	.....	.....	.....	1.00	33.03	2.00	14.00	527.84
Boxes and crates.....	128.58	206.64	206.64	87.08	.....	.....	.....	.....	128.58
Antituberculosis supplies.....	4,407.04	.....	.....	.....	.....	.....	.....	.....	4,407.04
Laundry.....	16.35	.....	.....	.....	.....	.....	.....	.....	16.35
Multigraph and adding machines.....	173.25	.....	.....	.....	.....	.....	.....	.....	173.25
Rent.....	261.68	339.17	339.17	.....	.....	208.33	542.52	169.74	1,763.38
Physicians' fees.....	884.50	.....	.....	.....	.....	.....	.....	411.68	1,894.50
Pasteur treatment.....	3,829.21	.....	.....	.....	.....	.....	.....	.....	3,829.21
Notary fees.....	.....	.....	.....	.....	.....	.....	13.50	.....	13.50
Oyster bed inspection.....	.....	.....	.....	.....	.....	197.71	99.40	.....	297.11
Moving expenses.....	.....	.....	.....	.....	.....	.....	218.25	.....	218.25
Advertising.....	.....	.....	57.21	.....	.....	.....	.....	.....	57.21
Quarterly expenses.....	.....	.....	.....	.....	1,329.04	.....	.....	.....	1,329.04
Laboratory supplies.....	.....	.....	.....	.....	479.13	458.96	.....	.....	938.09
Mailing cases.....	.....	.....	.....	.....	216.83	.....	.....	.....	216.83
Express and miscellaneous.....	.....	.....	.....	499.39	.....	.....	.....	.....	499.39
Chemicals.....	.....	.....	.....	.....	.....	124.70	.....	.....	124.70
Chemical apparatus.....	.....	.....	.....	.....	.....	764.41	.....	.....	764.41
Coal, gas, and electricity.....	.....	.....	.....	.....	.....	470.67	.....	63.27	533.94
Drinking water, cups, and ice.....	.....	.....	.....	.....	.....	62.40	.....	129.83	192.23
Repairs to laboratory.....	.....	.....	.....	.....	.....	90.33	.....	.....	90.33
Janitor's supplies.....	.....	.....	.....	.....	.....	.....	.....	35.60	35.60
Towel service.....	.....	.....	.....	.....	.....	.....	.....	79.05	79.05
Plumbing and repairs.....	.....	.....	.....	.....	.....	.....	.....	40.45	40.45
Insurance.....	.....	.....	.....	.....	.....	.....	.....	26.00	26.00
Total.....	9,611.17	16,336.52	7,380.44	8,869.17	7,994.40	10,272.68	8,307.17	7,574.86	76,346.41

It will be noted that the expense of maintaining the bureau of vital statistics amounted to \$7,380.44, most of which was incurred in the collection and compilation of reports of births and deaths. These reports in addition to their value to the health department have an even greater value for purposes not connected with the public health, as, for instance, the value to the individual in enabling him to establish his legal status, and it is hardly fair to charge the entire amount against expenses for public health. The bureau of vital statistics receives from the legislature an appropriation of \$5,000 and the difference between that amount and the actual cost of maintaining the bureau is paid out of the funds of the department of health and represents about one-third of the total expense of the bureau, or about the value of birth and death certificates to the department.

The cost to the counties of collecting certificates of births and deaths was for the 12 months ended June 30, 1913, \$14,558.37, and the same remarks that apply to the State are also applicable to the counties. With a reorganization of the State health subdivision it should be possible to eliminate part of this expense to the county by doing away with the fees now paid to the county health officers acting as county registrars, and thus reducing the expense of collecting certificates almost one-half.

Appropriations.

The appropriations for the State department of health for the year 1913 were as follows:

For the control of preventable diseases:

Epidemic.....	\$10, 000
Infectious diseases.....	3, 500
Communicable diseases.....	10, 000
Hydrophobia.....	2, 500
Secretary's salary.....	2, 500
Bureaus.....	24, 000
	<hr/> \$52, 500

For food and drugs:

Food and drink.....	2, 500
Food and drugs.....	15, 000
Vinegar.....	500
Chemist's salary.....	2, 500
	<hr/> 20, 500

Birth and death registration.....	5, 000
General expenses.....	2, 000
	<hr/> 80, 000

The first appropriation in the above list, namely, \$10,000 for epidemics, is not available to the department unless an epidemic pre-

vails, and then only by direction of the governor of the State. This amount is, then, practically lost to the department under normal conditions and can not be used to defray the expenses of ordinary maintenance or of growth and development. The total appropriations are therefore practically decreased from \$80,000 to \$70,000.

It will also be noticed that there is no appropriation for the bureau of sanitary engineering, and it became necessary when this bureau was organized to allot \$8,000 from the bureaus' appropriation of \$24,000, thus cutting down the amount available to other bureaus, yet giving the bureau of sanitary engineering an amount wholly inadequate for its purpose.

By subtracting the \$10,000 epidemic fund, which is not available except in emergencies, from the amounts appropriated for the control of disease, there is left a total of \$42,500, which is only a little over twice as much as is appropriated in the name of food and drugs, namely, \$20,500. In other words, for every dollar appropriated for the eradication of preventable diseases, there is approximately 50 cents appropriated for enforcing the food and drugs act. The sum allowed for the latter purpose is not too much by any means, especially when it is kept in mind that the chemical laboratory and most of the inspectors of the department are paid from these appropriations. Nevertheless, it must not be forgotten that much of the work of the chemical laboratory is done for the division of food and drugs and that most of the inspectors' time is given to the work of that division. It must be conceded, therefore, that a disproportionate amount of money is allowed for the enforcement of the food and drugs act as compared with the amount allowed to other bureaus, especially the bureau of sanitary engineering, which receives only \$8,000 and is many times more important in the prevention of disease.

While realizing the great importance of the food and drugs act, its enforcement plays little part in the prevention of communicable diseases. Except for the authority it may have over the milk and shellfish problems, it is largely concerned with economic problems—i. e., the prevention of fraud. While the logical place for a division of food and drugs would seem to be the department of health, yet its operations should not be permitted to overshadow the greater public-health activities required of such a department.

The amount of money that a health organization should be entitled to in order to carry on its operations is always a disputed point. There is probably no health organization in the United States which has sufficient appropriations to carry on health work as it would like to. It is, however, gratifying to study such appropriations, past and present, which study shows that with a better appreciation of the importance of public health there is also an

increase in the appropriations allowed by the legislatures or other governing bodies, so that in some States the amount granted to the health department has been practically doubled within a legislative year.

In considering appropriations for public health and sanitation a distinction must be made between the powers and duties of State and municipal organizations, for the reason that the State's duties are largely supervisory, those of a prosecutor, advisory, educational, and investigative, while a municipality, in addition to these duties within its jurisdiction, is also concerned in construction and maintenance of hospitals and other installations. It is the duty of a municipality to furnish its people pure water, adequate disposal of sewage, isolation hospitals, dispensaries, garbage disposal systems, public baths and laundries, convenience stations, Pasteurizing plants, etc. A municipality will require, therefore, a larger amount of money to care for public health and sanitation than does a State, as it must pay for its own installations, while the State ordinarily incurs no expense.

It is difficult to draw conclusions from financial reports, for the reason that some health departments have supervision and control of medical practice acts, or the licensing of plumbers, factory inspection, etc., while in other States these duties devolve upon other bodies. Furthermore, some State health departments are concerned in the maintenance of hospitals; as, for instance, Pennsylvania, which has control of tuberculosis sanatoria. This, however, is the exception rather than the rule and when it does occur is covered by a special appropriation.

As far as public health problems are concerned, they are pretty much the same all over the world and only vary in degree of importance according as they are affected by local conditions.

. In order to ascertain the amounts appropriated in different States for public-health purposes, and to make comparison of these amounts with the total revenues or expenditures and total population, the following table is presented.

Table showing the total revenues of certain States, and the amount expended by the State departments of health.

[The tables showing the "Total expenditures, appropriations, or revenues for 1 year" and "Expenses for State health department for 1 year" were obtained from the last available reports of State auditors, controllers, or treasurers, or from figures kindly furnished by the secretaries of State departments of health. Some inaccuracies may have occurred in gathering together these figures, but they should interfere but little with the purpose of the table.]

State.	Population estimated as of July 1, 1911.	Total expenditures, appropriations, or revenues for 1 year.		Expenses for State health department for 1 year.	Percentage of total expenditures for work of State health department.	Amount that would be received by a department at the rate of 2 per cent.
		Amount.	Designation.			
Massachusetts...	3,454,813	\$15,760,351.07	Expenses, 1912.....	\$167,600.00	0.0106	\$315,207.02
Washington.....	1,218,330	7,812,627.56	.....do.....	19,800.00	.0022	156,252.54
Michigan.....	2,867,794	7,445,519.60	Expenses, 1911.....	45,500.00	.0061	148,910.38
Minnesota.....	2,089,451	19,313,793.96	Receipts, 1912.....	61,886.91	.0032	386,275.86
Rhode Island.....	558,108	3,184,761.09	Expenses, 1912.....	17,000.00	.0053	63,695.22
Connecticut.....	1,140,003	6,423,287.91	Appropriation, 1913...	22,500.00	.0035	128,465.74
Oregon.....	672,765	4,366,047.00	Estimated appropriation, 1912.	36,000.00	.0082	87,320.00
Virginia.....	2,061,612	6,600,000.00	Appropriation, 1913...	35,000.00	.0053	132,000.00
Vermont.....	357,463	2,000,000.00	Appropriation, 1912...	25,100.00	.0125	40,000.00
Kansas.....	1,690,949	4,320,183.50	Appropriation, 1914...	30,550.00	.007	86,403.66
Indiana.....	2,723,441	11,370,969.00	Expenses, 1912.....	83,000.00	.007	227,419.38
Maine.....	748,233	5,366,785.75	.....do.....	18,250.00	.0034	107,355.70
New Jersey.....	2,634,583	9,657,366.11	Receipts, 1912.....	115,425.00	.012	193,147.32
California.....	2,486,757	8,598,502.00	Estimated appropriation, 1912.	119,600.00	.013	171,970.00
New York.....	9,372,954	50,337,233.00	Receipts, 1913.....	198,510.49	.0039	1,006,744.66
Pennsylvania...	7,831,890	29,132,646.00	Expenses, 1911.....	525,084.50	.018	586,652.80
Maryland.....	1,308,476	8,553,744.00	Expenses, 1912.....	70,000.00	.008	171,074.88

¹ Appropriations are made for 2 years.

Departments of health are naturally divided into a central and a field organization. If all such departments were organized on the same basis, the expenses for maintaining the central organization would be constant and more or less the same in all States. The size and therefore the expense of the field organization would vary in the different States, depending on the number, nature, and distribution of the population, area, ease of transportation, nature and number of industries, and any condition peculiar to the State itself.

In quoting the above figures some effort has been made to eliminate those amounts which are not ordinarily considered as legitimate expenditures of State boards of health. A study of the table shows that the State of Pennsylvania is the only one giving to its department of health an appropriation which should insure the carrying on of all reasonable public health activities in a State of such size, population, and importance. This appropriation represents approximately 2 per cent of the total moneys available to the State.

The next appropriations in size are received by New Jersey, California, and Massachusetts, and represent approximately 1 per cent of the respective States' available moneys, and are manifestly too small to permit public health work to expand as it should. Mary-

land is receiving but eight-tenths per cent, an entirely inadequate amount.

Having studied the conditions in this latter State pretty thoroughly, it can be reasonably affirmed that if the health department should at the present time receive 2 per cent of the State's funds, namely, \$171,074.88, it could expand to that degree of efficiency desired by all those interested in the betterment of public health within the State. This amount would of course not enable the department to maintain institutions such as tuberculosis sanatoria, which require special appropriations, nor is it possible to foretell the amount that may be necessary for future public health activities.

While it is highly desirable and proper that county or district health officers should be directly responsible to the State department of health, it must not be assumed that the county should in consequence be relieved of all responsibility in health matters. It is under the same obligations to pay for health activities within its boundaries and to render assistance to the State's representatives as if those officials were really county officers.

As to appropriations for the purpose, the county is, in a smaller way, in the same position as the State, and not less than 2 per cent of its available funds should be set aside for public health work to be spent to the best advantage under the supervision of the State's representatives.

This figure, namely, 2 per cent of available funds, must not be taken as a criterion in estimating the amount the health department of a city should receive, as, for reasons given before, not less than 15 per cent should be allotted for such purposes.

Officers of the State Department of Health.

STATE BOARD OF HEALTH.

Dr. William H. Welch, professor of pathology at Johns Hopkins University, president.

Dr. Edgar A. Jones, pathologist to the Cambridge Hospital, member.

Dr. Nathan R. Gorter, commissioner of health for the city of Baltimore, member.

Mr. John E. Greiner, consulting engineer, Baltimore, member.

Hon. Edgar Allen Poe, attorney general for the State of Maryland, member.

Dr. William W. Ford, associate professor of hygiene at the Johns Hopkins University, member.

Dr. John S. Fulton, professor of State medicine, University of Maryland, secretary.

EXECUTIVE OFFICE.

Dr. John S. Fulton, secretary and executive officer.

Mr. William Pinkney White, general counsel.

Mr. Henry M. McCullough, special counsel.

BUREAU OF COMMUNICABLE DISEASES.

———, chief of bureau.

Dr. C. W. G. Rohrer, assistant and acting chief of bureau.

BUREAU OF VITAL STATISTICS.

Dr. Frederick V. Beitler, chief of bureau.

———, assistant chief of bureau.

BUREAU OF SANITARY ENGINEERING.

Mr. Robert Morse, A. B., B. S., chief of bureau.

Mr. Harry Hall, B. S., assistant chief of bureau.

BUREAU OF BACTERIOLOGY.

Dr. William Royal Stokes, chief of bureau.

Dr. H. W. Stoner, assistant chief of bureau.

BUREAU OF CHEMISTRY.

Dr. W. B. D. Penniman, chief of bureau.

Dr. W. W. Randall, assistant chief of bureau.

DIVISION OF FOOD AND DRUGS.

Dr. Charles Caspari, State food and drug commissioner.

CLERICAL DIVISION.

Mr. W. N. Kirkman, chief clerk.

HEALTH ACTIVITIES CARRIED ON BY OTHER AGENCIES.

Certain activities relating more or less directly to a department of health are carried on by State boards or commissions which are entirely distinct from the Department of Health of Maryland. They are as follows:

Activities.	Board or commission.
Licensing of barbers.....	State board of barber examiners.
Control of dairies.....	State live-stock sanitary board.
Regulation of practice of dentistry.....	State board of dental examiners.
Inspection of factories.....	Bureau of statistics and information.
Control of insane and insane asylums.....	Lunacy commission.
Regulation of practice of medicine.....	State boards of medical examiners (two), one representing the Medical and Chirurgical Faculty of Medicine of the State of Maryland and one representing the Maryland State Homeopathic Medical Society.
Registration of nurses.....	State board of examiners of graduate nurses.
Regulation of practice of pharmacy.....	Commissioners of pharmacy.
Certification of competence of plumbers.....	State board of commissioners of practical plumbing.
Investigation of tuberculosis and control of sanatoria.	Tuberculosis commission.
Regulation of the practice of undertaking.....	State board of undertakers of Maryland (applies to Baltimore city only).
Dispensing and manufacture of vaccine.....	State vaccine agency.
Regulation of the practice of veterinary medicine..	State veterinary medical board.

RECOMMENDATIONS.

As a result of a careful study of public-health administration in Maryland continued over several months, certain definite conclusions have been reached and are made the basis of recommendations as follows:

1. That the State be divided into not less than 10 districts, each district to be composed of one or more counties, at the discretion of the State board of health.

2. That a physician trained in sanitary science be placed in each district, and that he be given an office and an adequate number of assistants, including inspectors, nurses, and a clerk.

3. That he hold office during efficiency and good behavior, and that he be given an adequate salary from the State, and that he be prohibited from practicing medicine or engaging in any private business that would interfere with his official duties; that he be allowed traveling expenses when traveling on account of official business; and that he be given, as he proves himself capable, a regular yearly increase in salary until he has reached a maximum which, in the judgment of the board of health, is sufficient; that he first receive a probationary appointment to determine his qualifications in the field; and that no one be appointed until he has passed an examination before the board or the secretary or has otherwise proved himself capable of filling the position.

4. That he be made responsible to the State department of health for the conditions in his district, and that he be given full power to enforce laws and regulations within his jurisdiction, and authority over all county, city, or town health officials.

5. That his powers and duties be well defined by law and include supervision of the work of all county, city, or town health officers; the enforcement of the law regarding the notification of cases of disease; inspection of dairies, canneries, and all places of business or manufacture within his jurisdiction; the inspection of county schools and school children; the investigation of nuisances and the abatement of the same; investigation of cases of sickness and institution of measures for the control of disease; the enforcement of the vaccination act; the keeping of complete records of transactions and forwarding all necessary reports to the State department of health; the delivery of public lectures throughout his district; the collection of samples for analysis; the enforcement of the laws relating to the registration of births and deaths; and the performance of all other duties that may be required of him by the State department of health.

6. That the field organization be mobile, so that a force of health officers or assistants can be concentrated in any part of the State or the city of Baltimore in case of epidemics.

7. That every incorporated town, and every town not incorporated of 1,000 people or over, be required to appoint, or the county commissioners be required to appoint, a health officer to represent that community, to receive a small salary, and to assist, as far as practicable, the district health officer in the performance of his duties; and that any person so appointed must have been previously approved by the State department of health.

8. That two or more adjacent towns be permitted to combine their available funds for health work and employ one health officer, who

shall be the health officer for each of the towns entering into such combination.

9. That provision be made by law for calling a conference of district health officers annually, or oftener, by the secretary of the State board of health, the expenses so incurred to be paid by the department of health.

10. That every county be required to set aside at least 2 per cent of its available funds each year to be devoted to the betterment of public health within the county, and that the expenditure of such funds be approved by the State board of health.

11. That the inspection force of the department be increased, and that this increase in numbers include at least one medical inspector.

12. That a comprehensive law be enacted making it compulsory on the part of all persons interested to have plans for proposed installations of water supplies, sewerage, and refuse-disposal systems approved by the State department of health; that the State department of health be empowered to require any changes or extensions in already existing installations that may be necessary to insure pure water supplies or proper sewage or refuse disposal systems; or to order the installation of new water-supply and sewerage or refuse disposal systems in the absence of same; and giving the State department of health the power to close or to prevent the use of water from any well, spring, etc., that, in its opinion, is dangerous to health; or to require the filling or draining of places where there is any accumulation of stagnant water, breeding mosquitoes or otherwise being a nuisance.

13. That the State be divided into at least four districts, in each of which shall be placed a representative of the State department, to be known as district engineer, and to come under the supervision of the bureau of sanitary engineering, and to be a graduate engineer or sanitary engineer.

14. That as the work of the bureau of sanitary engineering is increasing rapidly, there be added to its force of employees, in addition to the district engineers, more inspectors, draftsmen, and as necessary, clerks or stenographers.

15. That special attention be given to the heating, lighting, ventilation, water supply, toilet facilities, and sewage disposal in the public schools throughout the State.

16. It is recommended that sufficient money be appropriated to defray the expenses of the necessary reorganization as previously recommended, the amount so appropriated not to be less than \$50,000.

17. That a special appropriation be made for the bureau of sanitary engineering, or that the so-called bureaus' appropriation be increased to permit of a larger allotment to this bureau, the amount of appropriation so allowed not to be less than \$15,000.

18. That the appropriation of \$2,000 for general expenses, an amount which was allowed some years ago and which at present is manifestly inadequate, be increased to \$10,000 to cover the general expenses of the department, which has grown so extensively in recent years.

19. That a State-wide campaign be carried on against typhoid fever.

19½. That investigative studies be carried on in the State relative to pellagra, trachoma, hookworm, infantile morbidity and mortality, and malaria.

20. That the vaccine agency be abolished and its functions given to the department of health and the vaccination act be amended so as to make it stronger and modern.

21. That the method of handling nuisances be simplified.

22. That laws be enacted providing for the maintenance of sanitation of factories, canneries, stables, hotels, restaurants, etc.

23. That the maintenance of the sanitation of dairies and the control of milk supplies be taken out of the hands of the State live stock sanitary board and placed in the hands of the State department of health, and that more adequate laws and regulations be made to cover the subject.

24. That a law be enacted giving the State department of health power to require factories to take the necessary steps to prevent occupational diseases.

25. That the provisions of the model law for morbidity reports approved by the conference of State and Territorial health authorities with the Public-Health Service be adopted by the State of Maryland.

26. That a law be enacted requiring physicians to report death, recovery, or removal of all cases of communicable diseases, and that some "follow-up" system be used in the bureau of communicable diseases.

27. That the duty of statistical compilation and tabulation of morbidity reports be transferred from the bureau of communicable diseases to the bureau of vital statistics, this transfer to include also the work of statistical compilation and tabulation of occupational diseases.

28. That the special work of statistically compiling and tabulating reports of tuberculosis, at present performed by the tuberculosis clerk, be placed under the direct charge of the bureau of vital statistics.

29. That an approved form of birth certificate be devised to give more complete information.

30. That tabulating machines be installed.

31. That morbidity reports and mortality and birth certificates received by the city of Baltimore be transmitted daily by the city to the State department of health, either as originals, transcripts, or

punched cards, and that the work of statistically compiling and tabulating them be performed by the State department in conjunction with or for the city of Baltimore, as it now performs such work for all other parts of the State.

32. That a law be enacted requiring the reporting of all marriages and divorces to the State department of health.

33. That a system of school inspections be inaugurated and carried on throughout the State.

34. That the annual report be reduced in size as previously indicated and a financial report added.

35. That the present monthly bulletin for health officers be greatly simplified by omitting the detailed list of cases by name, etc.

36. That a popular bulletin be issued monthly and specially used for instructing children of the public schools.

37. That the State department of health aid the medical and chirurgical faculty by acquiring and loaning exhibits for its annual trip through the State.

38. That the books contained in the library be catalogued so that their contents may be available for reference.

39. That the secretary of the State department of health be granted a salary of not less than \$3,000 per year. This amount is stated not because it is deemed sufficient either for the position or for its present occupant, but because the constitution of the State of Maryland limits the salary of its officials to that amount except in a few specified instances.

40. That bureau chiefs be required to devote at least five working hours each day, except Saturday, and on Saturday at least three working hours, to official business.

41. That any bureau chief who devotes his entire time to the business of the department be granted a salary of not less than \$3,000 annually.

42. That seven working hours be considered as an official day's work.

Since the study of the department of health was begun, certain of the matters recommended in this report have already been acted upon by the State board. Bills have been prepared for introduction into the legislature relating to an increase in the secretary's salary; the maintenance of sanitation in all places where food products are manufactured or sold; the formation of an adequate district field force, and a comprehensive control of water supplies and sewerage systems. In addition, the board has decided on a standard working day of seven hours, a new birth certificate has been adopted, and tabulating machines have been installed, and the city of Baltimore is now sending its daily morbidity report sheets to the State department of health every seven days.